MAR 19 1929

American Journal of Public Health

And *The Nation's Health*

Medical Lib.

Volume XIX March 1929 Number 3

The Tuberculous Worker in Industry
BERGQUIST

Carbon Monoxide Determination
MARTINEK AND MARTI

Tuberculosis in Racial Types
GOLDBERG

Health Demonstrations
RUHLAND

Special Supplement
Mental Hygiene Survey Schedule

Published by the
American Public Health Association

Gilliland

Biological Products

PREPARED UNDER U. S. GOVT
LICENSE No. 63

TOXIN-ANTITOXIN

Our toxin-antitoxin creates an active immunity against diphtheria which begins in about 8 to 12 weeks and continues effective for many years—possibly for life. *Gilliland toxin-antitoxin is prepared from antitoxin of both horse and goat origin.* Supplied in 3-1 cc. Ampul and Syringe containers and in Vial packages containing 5, 10 and 20 cc.

SMALL-POX VACCINE

Our small-pox vaccine may be relied upon at all times, it being a pure and safe product of guaranteed potency. It is furnished in clear glass capillary tubes, hermetically sealed, with needle for scarifying, and bulb for expelling the vaccine. Supplied in packages containing 1, 2, 5 and 10 tubes and needles.

TYPHOID VACCINE

Our typhoid vaccine (plain or combined) is prepared in accordance with the technique employed in the Army Medical School and in laboratories especially adapted to its manufacture. It is supplied in 3-1 cc. Syringes and Ampuls, 30-1 cc. Ampuls, also 5 cc., 10 cc., and 20 cc. Vials.

The Gilliland Laboratories

Biological Products Exclusively

Marietta, Pa.

State and Municipal Boards of Health, Hospitals and like Institutions are given a special discount or quoted net on request.

American Journal of Public Health
and THE NATION'S HEALTH Vol. XI No. 3

Volume XIX March, 1929 Number 3

Age Distribution in Milk-Borne Outbreaks of Scarlet Fever and Diphtheria*

EDWARD S. GODFREY, JR., M. D., FELLOW A. P. H. A.

Director, Division of Communicable Disease, State Department of Health, Albany, N. Y.

THAT there has been an unusual proportion of adult cases in milk-borne outbreaks of scarlet fever, seems first to have been noted by Littlejohn in 1899.[1] Ker,[2] in his textbook, gives it not only as a characteristic of scarlet fever but of diphtheria as well. More recently, Clarke[3, 4, 5] has called attention to the phenomenon and suggested its value as a means for the early diagnosis of milk-borne outbreaks.

Strangely enough, although this peculiarity has been noted in the reports of numerous outbreaks, the only allusions to it as a characteristic appear to be those quoted, all of which are from Edinburgh authorities. Ker,[2] indeed, thought this might be merely a local characteristic due primarily to the extensive use of milk on porridge by Scotch adults. Of the 9 diphtheria outbreaks cited by Clarke,[5] however, 5 were in England.

The only allusions to this peculiarity as a characteristic of milk-borne infection that I have found in American literature are in the pamphlet on scarlet fever published by the U. S. Public Health Service in 1914,[6] in an article of my own on outbreaks attributed to pasteurized milk,[7] and in the recent study by Armstrong and Parran.[8] There has not been, so far as I am aware, any inquiry to determine how frequently this peculiarity shows itself nor to account for its occurrence.

With the idea of contributing something toward the answer to the

* Read at a Special Session on Epidemiology of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928.

first of these questions, I have tabulated by age all of the cases attributed to milk-borne infection with scarlet fever and diphtheria that have occurred in New York State since 1914, and all of those found in recent literature in which the age distribution has been given. Further, through the courtesy of S. J. Crumbine, M.D., I have received the names of places in the United States that have been reported to him as having had milk-borne outbreaks of scarlet fever and diphtheria since 1923. By following these up I have been able, either through the state directors of communicable diseases or the local health officers, to obtain the age distribution in 11 outbreaks of scarlet fever and 2 of diphtheria.* Altogether a series of 21 outbreaks of scarlet fever comprising 1,362 cases, and 11 outbreaks of diphtheria comprising 709 cases have been collected. These outbreaks are listed in Tables II and III. No outbreak in which exposure was limited to a special age group has been included.

A higher incidence in children is generally accepted as a charac-

TABLE I

PERCENTAGE OF CASES BY AGE IN MILK-BORNE INFECTIONS AS COMPARED WITH INFECTIONS FROM ALL SOURCES

	Column 1 Typhoid			Column 2 Scarlet Fever			Column 3 Diphtheria		
		A	B		A	B		A	B
Ages		Milk-borne *	All cases †		Milk-borne *	All cases †		Milk-borne *	All cases †
Years	No.	Per cent	Per cent	No.	Per cent	Per cent	No.	Per cent	Per cent
Total	919			1,105			241		
0–4	66	7.2	4.5	206	18.6	17.4	24	10.0	22.2
5–9	147	16.0	13.8	269	24.3	38.0	39	16.2	34.8
10–14	131	14.2	14.3	174	15.7	23.1	32	13.3	17.8
15–19	131	14.2	14.2	119	10.7	8.4	26	10.8	7.0
20–29	168	18.2	21.7	195	17.6	7.9	49	20.3	8.7
30–39	118	12.9	14.0	80	7.2	3.8	30	12.4	5.6
40–49	77	8.4	9.3	37	3.3	1.0	22	9.1	2.5
50–59	43	4.7	5.3	17	1.7	0.3	11	4.6	1.0
60 and over	38	4.2	2.9	8	0.7	0.1	8	3.3	0.4
10 and over		76.8	81.8		—	—		—	—
15 and over		—	—		41.4	21.5		60.5	25.2
				Age Ratios					
−10 : 10+		1 : 3.31	1 : 4.47		—	—		—	—
−15 : 15+		—	—		1 : 0.70	1 : 0.27		1 : 1.35	1 : 0.34

* In New York State 1917–1926

† New York State places of less than 200,000, 1915–1924, Vol. 1, *Annual Report* New York State Dept. of Health for 1925.

teristic of milk-borne typhoid fever outbreaks. In order to test the general truth of this observation and to ascertain its constancy, I have examined our New York data comprising 64 typhoid outbreaks, with 919 cases of known ages, attributed to milk-borne infection. These have been tabulated by age by individual outbreaks and then assembled for the entire series and the percentages by age periods calculated. The latter are presented in Table I, Column 1A. For comparison, the percentages by the same age groups for all typhoid cases in places of less than 200,000 in New York State are given in Column 1B. It is seen that 7.2 per cent of the milk-borne cases are under 5 years of age as compared with 4.5 per cent for all cases, an excess of 60 per cent. The excess is 27 per cent in the age group 0–10 years and 45 per cent at ages 60 years and over. Our figures therefore tend to confirm the observation that children are unusually liable to attack in milk-borne typhoid, but indicate that this liability is largely due to the excess at ages under 5. They further indicate that people over 60 years of age are relatively more subject to attack from milk-borne typhoid than younger people over 5 years of age.

Columns 2A and 2B show corresponding percentages for scarlet fever. Here we see that there is a slightly higher percentage of milk-borne cases at ages under 5 but markedly lower percentages at ages 5–9 and 10–14. The excess at age 0–4 is about 8 per cent, but the deficiency at 5–14 is 35 per cent. At all ages over 14 there is a consistently higher percentage of cases in milk-borne scarlet fever than in scarlet fever from all causes. It will be noted too that the relative excess grows greater with each succeeding decade as age increases.

Column 3 shows the corresponding percentages for diphtheria. We note that there is not an excess of milk-borne diphtheria at ages 0–4 but a deficiency of over 50 per cent. At ages 5–14 the deficiency is 25 per cent while in every age group above 14 there is an excess which increases relatively just as in scarlet fever.

Although, for reasons which will be explained later, the figures of certain outbreaks have not been used in calculating these percentages for scarlet fever and diphtheria, the omissions do not change the result much. It seems to be true then that a high age incidence is a general characteristic of milk-borne scarlet fever and diphtheria and not merely a peculiarity dependent primarily on an unusual age distribution in the consumers. Not only this, but it is much more marked than the incidence among children in milk-borne typhoid fever.

The next question is to determine how constantly this characteristic appears in individual outbreaks. Table II lists each of the outbreaks of scarlet fever for which satisfactory age data have been se-

TABLE II

AGE RATIOS IN MILK-BORNE OUTBREAKS

SCARLET FEVER

	Total Cases	Ratios −15 : 15+	Per cent of cases over 15 years
N. Y. All cases 1915–24 *	66,951	1 : 0.27	21.5
N. Y. Rural cases only †	24,031	1 : 0.32	24.4
Wappingers Falls, N. Y., and vic. 1915	53	1 : 0.66	39.6
Ossining, N. Y. 1921	24	1 : 0.33	25.0
Croton, N. Y. 1922	68	1 : 1.62	61.8
Huntington, N. Y. 1922	90	1 : 0.76	43.3
Buffalo, N. Y. 1923	59	1 : 0.26	20.3
Cohoes, N. Y. 1924	20	1 : 0.67	40.0
Binghamton, N. Y. 1925	39	1 : 0.77	43.6
Troy, N. Y. 1926	14	1 : 1.00	50.0
Deposit, N. Y. 1926	34	1 : 1.13	50.0
Bristol, Conn. 1924	125	1 : 0.67	40.0
Flint, Mich. 1924 ‡	100	1 : 1.04	51.0
Pittsfield, Mass. 1924	7	1 : 0.00	0.0
Clinton, Mass. 1925	56	1 : 0.81	44.6
Netcong and Stanley, N. J. 1925	50	1 : 0.82	34.0
Scio, O. 1925	50	1 : 0.47	32.0
(?), Minnesota 1926	67	1 : 0.43	29.9
St. Johns, Mich. 1926	73	1 : 0.43	30.1
Kalispell, Mont. 1927 **	150	1 : 0.70	41.3
Washington, N. J. 1927	199	1 : 1.06	51.8
Janesville, Wis. 1928	21	1 : 1.63	61.9
LaCrosse, Wis. 1928	63	1 : 0.50	33.3
Total milk-borne cases	1,362		
Average		1 : 0.75	39.2
Median		1 : 0.70	40.0

* Places of less than 200,000 population
† Cases occurring in unincorporated territory
‡ Ice cream
** Ages over 30 years not distributed

cured. Three of these have not been used in calculating the percentages in Column 2A. The outbreak in Flint, Mich.,[20] was not used because the infection was transmitted through ice cream and therefore probably exposed a greater percentage of older people than milk ordinarily would. The Pittsfield, Mass., outbreak was excluded because there seemed to be a question as to the sufficiency of the evidence incriminating milk. While I do not pretend to have gone into the evidence in each of these out-of-state outbreaks, it has been fur-

nished and examined in several instances and in the others I have assumed that it was adequate because of the sources through which the age data came. The age distribution in this Pittsfield outbreak was so far out of line that it was queried and the response was not satisfactory. It was felt that in an outbreak of this size the exclusion of other possibilities should be made with considerable care before acceptance.

The only reason for excluding the Kalispell, Mont., outbreak was the grouping of all cases 30 years of age and over. The evidence was ample but the figures could not be used in calculating the percentages for the decades beyond 30, and their exclusion made very little difference in the percentages under 30.

Column 2 of Table II shows the ratio of the number of scarlet fever cases under 15 years of age to the number 15 years and over. For comparison, this ratio is given for all scarlet fever, regardless of mode of infection, as it occurred in places of less than 200,000 in New York State. Also, since the age incidence tends to rise as congestion decreases, this ratio is given for the unincorporated places only in New York State. Running down this column we find, aside from the Pittsfield outbreak, one (Buffalo) in which the ratio is less than that for all places less than 200,000. This ratio is probably a little higher than for the general run of cases in a city the size of Buffalo, but it certainly is not enough higher to be significant or to be useful as an indicator. In this outbreak the evidence incriminating the milk supply was quite conclusive. All of the cases were on one milk route; they occurred explosively; there was sufficient dispersion to make school or neighborhood contact improbable; and 6 unrecognized cases had existed for nearly two months on a dairy farm supplying milk to this dealer.

There are 5 other outbreaks in this list in which the ratio is less than twice that for rural New York. If we take this ratio as a criterion, this characteristic is present in significant proportions in 70 per cent of milk-borne outbreaks of scarlet fever. Applying this criterion to the 15 outbreaks of typhoid occurring in New York State since 1916, involving 19 cases or more each, there was a significant percentage of cases under 5 years of age in only 40 per cent of them. Under 10 years of age there were only 2 out of the 15 that had twice the percentage usually found in typhoid from whatever cause.

Table III is a table for diphtheria corresponding to Table II for scarlet fever. The figures of two outbreaks in this list were not used in calculating the percentages in Table I—the one in Rhode Island" because it was an ice cream outbreak and because the age distribution

beyond the 15th year was not given, and the Westchester County outbreak because it was transmitted by certified milk and hence largely limited to small children. The latter affords the *only* instance in which the ratio of cases over 15 was less than in the general run of cases either in New York State or in its rural districts only. The only other outbreak in which the ratio fell below twice that of rural New York occurred in Suffern, and here it will be noted that it approaches this criterion very closely.

It cannot be definitely determined whether a high ratio of adult cases of scarlet fever or diphtheria necessarily means milk-borne infection; probably it does not, even if outbreaks occurring among groups of adults in camps and institutions be excepted. A recent non-explosive outbreak of diphtheria in rural New York was confined almost exclusively to adults and was apparently spread by contact alone. Such an occurrence, however, would require somewhat exceptional conditions, and in this connection it should be remembered

TABLE III

AGE RATIOS IN MILK-BORNE OUTBREAKS

DIPHTHERIA

	Total Cases	Ratios −15 : 15+	Per cent of cases over 15 years
N. Y. All cases 1915–24*	50,254	1 : 0.34	25.2
N. Y. Rural cases only†	13,446	1 : 0.45	30.9
Lincoln, Neb. 1913	110	1 : 1.39	58.2
Suffern, N. Y. 1915	13	1 : 0.86	46.1
Middletown, N. Y. 1916	18	1 : 1.57	61.6
Rhode Island and vic. 1916‡	402	1 : 1.58	61.2
Westchester Co., N. Y. 1920**	66	1 : 0.27	21.2
Saranac Lake, N. Y. 1922	16	1 : 3.00	75.0
Painesville, O. 1924	23	1 : 0.92	47.8
Stoneham, Mass. 1925	24	1 : 3.80	79.2
Olean, N. Y. 1925	14	1 : 1.33	57.1
Alexandria Bay, N. Y. 1926	12	1 : 1.40	58.3
Mexico, N. Y. 1926	11	1 : 2.67	72.7
Total milk-borne cases	709		
Average		1 : 1.71	
Median		1 : 1.40	58.3

* Places of less than 200,000 population
† Cases occurring in unincorporated territory
‡ Ice cream
** Certified milk

TABLE IV

DATA ON DEPOSIT, N. Y., OUTBREAK OF SCARLET FEVER

Ages Years	Total Persons on Route: Pop. on Route	Attacked	Attack Rate Per cent	Milk Drinkers Only: Pop.	Attacked	Attack Rate Per cent
Total	255	34	13	129	32	25
0–4	24	3	12.5	12	2	17
5–9	22	9	41	21	9	43
10–14	22	4	18	12	4	33
15–19	22	5	23	12	4	33
20 and over	165	13	8	72	13	18
0–15	68	16	24	45	15	33
15 and over	187	18	10	84	17	20

that a high percentage of young children is not an infallible indication of milk-borne typhoid. It is sometimes found in water-borne typhoid if the community has had either a high endemic rate or has been subject to outbreaks at short intervals. In an outbreak in Watervliet, N. Y., in 1917, out of 120 cases of known age, 28 per cent were in children under 10.

I have not attempted an explanation of the phenomenon, partly because of limited space, but principally because of the limited data on which to base or by which to test any theory that might be evolved. The most obvious theory, namely that the exposure of adults is increased *relatively* more than the exposure of children, does not seem to be borne out in the two small outbreaks (shown in Tables IV and V). These are the only outbreaks for which I could obtain a census by age of the dealer's customers.

TABLE V

DATA ON MEXICO, N. Y., OUTBREAK OF DIPHTHERIA

Ages Years	Total Persons on Route: Pop.	Not immunized	Attacked	Rate—non-immunized
Total	63 or 66	49 or 52	11	22 or 21
0–4	3 or 5	1 or 3	0	0
5–9	4	3	0	0
10–14	12	8	3	37.5
15–19	6	5	2	40
20 and over	38 or 39	32 or 33	6	19 or 18
0–15	19 or 21	12 or 14	3	25 or 21
15 and over	44 or 45	37 or 38	8	21

In the Deposit, N. Y., outbreak (Table IV), satisfactory data on the use of milk by each individual on the route were recorded.

It will be seen that the attack rate in adult milk drinkers is only about one-third less than in children. In the Mexico, N. Y., outbreak (Table V), the attack rate in adults is equal to or only slightly less than it is in children, making no allowance for the milk drinking habits at the different ages. These tables are submitted not because they prove or disprove anything, but merely to illustrate the kind of data we shall have to accumulate before the explanation can be reached.

In conclusion, I would say it will always pay to investigate the milk supply whenever an unusual *number* of adult cases of scarlet fever or diphtheria occur in a community. Suspicion should be excited by an unusual *number* of adult cases occurring within a limited period. Milk-borne outbreaks which are non-explosive do occur and a still greater number of them lack explosiveness in their beginnings. The practical application of this age characteristic therefore may lead, as it has in Edinburgh, to the early recognition of milk-borne scarlet fever and diphtheria and to correction of the cause.

REFERENCES

1. *Annual Reports*, M. O. H. City Edinburgh, 1899 and 1903.
2. Ker, C. B. *Infectious Diseases*, London, 1909.
3. Clarke, J. H. *Med. Off.*, 31: 21 (May 24), 1924.
4. *Ibid.*, 31: 26 (June 28), 1924.
5. *Ibid.*, 34: 20 (Nov. 14), 1925.
6. Scarlet fever, *Special Bull.*, U. S. P. H. S., 1914.
7. Godfrey, E. S., Jr. Epidemics Attributed to Pasteurized Milk, *Nation's Health*, June, 1923.
8. Armstrong and Parran. *Supplement No. 32* to *Pub. Health Rep.*, 1927.
9. I am indebted to the following for their assistance in securing the data respecting outbreaks in their states or communities:
S. J. Crumbine, M.D., General Executive, American Health Assn., New York, N. Y.
Howard A. Lanpher, M.D., Epidemiologist, Dept. of Health, Hartford, Conn.
C. L. Scamman, M.D., Director, Division Communicable Diseases, State Health Dept., Boston, Mass.
Don M. Griswold, M.D., D.P.H., Deputy Commissioner of Health, Lansing, Mich.
O. McDaniel, M.D., Director, Division Preventable Diseases, Minneapolis, Minn.
D. C. Bowen, M.D., Director of Health, Trenton, N. J.
C. P. Robbins, M.D., Chief, Division Communicable Diseases, State Health Dept., Columbus, O.
J. Milton Scott, M.D., Health Officer, Scio, O.
H. M Guilford, M.D., Director, Bureau Communicable Diseases, State Health Dept., Madison, Wis.
F. L. Leister, M.D., Health Officer, Marshfield, Wis.
Fred Welch, M.D., Health Officer, Janesville, Wis.
A. M. Murphy, M.D., Health Officer, LaCrosse, Wis.
E. E. Epting, M.D., Director, Anderson Co. Health Unit, Anderson, S. C.
W. S. Little, M.D., Health Officer, Kalispell, Mont.
10. Ramsey, G. H. *Am. J. Hyg.*, 5: 669–681, 1925.
11. McCoy, G. W. *Pub. Health Rep.*, 32: 1787–1804, 1917.

The Tuberculous Worker and His Placement in Industry*

CHARLES W. BERGQUIST

President, Chicago Tuberculosis Institute; Superintendent Public Relations, Western Electric Company, Chicago, Ill.

IN considering the question of the tuberculous worker and his placement in industry, attention should naturally first be given to those points which would justify the consideration of this particular disease over other diseases.

During the past 25 years the mortality rate from tuberculosis has been reduced more than 50 per cent. Despite this continual and appreciable decline, tuberculosis is still the most destructive and fatal disease among wage earners throughout the United States. It is very prominent as a cause of death between the ages 15 and 44 years. About 1 death out of every 4 in this age group is due to tuberculosis.

Nearly two-thirds of all deaths from tuberculosis occur during that period of life when a person is of the greatest economic value to his family and yet is most insecure financially. Louis I. Dublin, Ph.D., in his recent book *Health and Wealth*, states that mortality rates for both sexes, although practically the same up to 10 years of age, are considerably higher for females than for males during the next 15-year period.

The white female rate is highest at about 26 years of age, when it is 138.3 per 100,000. The white male rate reaches its maximum at about 52 years of age, when it is 214.1 per 100,000.

Beyond the age 30 the rate for both sexes drops rapidly, and continues among white persons throughout the rest of life below that of males.

Although heart disease, pneumonia and cancer lead tuberculosis in causes of death among the people of the United States, tuberculosis really faces the competition of only heart disease. Both cancer and pneumonia are diseases which occur more frequently in an older age group, and they are different in cause and character. Four-fifths of all deaths from heart disease occur in the group over 40 years of age; in tuberculosis, death usually occurs at an earlier age.

* Read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 19, 1928.

The long period of illness resulting from tuberculosis makes it one of the most costly diseases both in the expense for proper care and treatment and in the money lost by the wage earner during his sickness. Moreover, the records of the Association for Improving the Condition of the Poor in New York City show that tuberculosis predominates as a cause of dependency.

Because of these facts, I believe it is entirely logical to give consideration to the detection of tuberculous employes, their proper placement and care, and a rehabilitation program for those who return which will make them eventually self-supporting and an asset to their families and to the community.

It has been estimated that a tuberculous patient is under care for an average of 2⅓ years. For an additional year at least he is probably unable to earn his normal wage. He is, therefore, during this entire period, a nonproductive workman, deprived of his income and faced with abnormal expenses for the treatment of himself and the maintenance of his family. It is quite necessary that during these years he be under close medical supervision which will help him to regain his place in industry. The rehabilitation program, therefore, has come to be recognized as the most important phase in the patient's after-sanatorium treatment.

Assuming at the outset that the patient will return to his former occupation if possible, the plans for his rehabilitation should go forward while he is in residence at the sanatorium—and if possible should be considered a part of his treatment.

INDIVIDUAL RESPONSIBILITY

Generally speaking, tuberculosis is most prevalent among families with small incomes whose home conditions and environment are not conducive to the building up and maintaining of body resistance.

Unsatisfactory working conditions may tend to stimulate a tubercular lesion already present, but the position and habits of life of the patient outside his working environment doubtless play a more important rôle in his disability. The 8 hours now generally accepted as the working day are not as responsible for tuberculosis as are the 16 remaining hours in which the individual follows his own inclinations. In commenting on this phase of the subject, the editor of *Nation's Health* made the following editorial comment about a year ago:

> Tuberculosis among industrial workers has always been an interesting health problem and often a controversial one from the standpoint of social and economic responsibility. It is an accepted fact that tuberculosis does not arise from industrial processes any more than do measles, scarlet fever, or other communicable diseases.

The workman's environment in early life has a profound influence on his later years as far as this disease is concerned, for we know that in many cases the infection has taken place in childhood.

Such studies as have been made in individual factories, presenting no special hazards, have shown a tuberculosis rate comparable to the general community, or about 2 per cent.

Because of the comparative ease with which industry can provide facilities for diagnosing tuberculosis and other disabilities, it has a certain responsibility in the matter. But until the personal responsibility and social environment of the patient have been properly evaluated, industry should not be charged with both social and economic consequences of this disease.

SANATORIUM TREATMENT MOST EFFECTIVE

There are three essential facts to be considered in connection with a study of tuberculosis. Tuberculosis is communicable; tuberculosis is preventable; tuberculosis is curable. The earlier the diagnosis, and the sooner the treatment is started, the better is the chance for recovery.

Without proper treatment the progress of the disease cannot be combated successfully, and authorities agree that there is no place where a patient with tuberculosis can be treated so well and learn so much about taking care of himself as in a good sanatorium.

If adequate facilities for the treatment of a case can be found in a nearby sanatorium, the patient will gain several advantages: Transportation expenses will be reduced; visits from members of the family can be more frequent, thus helping to develop a good mental attitude on the part of the patient; the physician representing the industry in which the patient worked can follow the progress of the case much more effectively; and in many instances there will be less opposition from the patient himself if he knows that the sanatorium to which he is going is not located at any great distance from his home.

Dr. Allen K. Krause, Editor of the *American Review of Tuberculosis*, and on the staff of the Johns Hopkins Hospital, is authority for the following statement:

The day when tuberculosis sufferers went to other climatic regions for treatment is passing and the trend of treatment of tuberculosis during the last generation may be summed up in one word—"sanatoria."

For a long time the trend has been away from climatic treatment. It has been established that the tuberculosis patient in all stages of the disease can regain health or be greatly and permanently improved by the proper treatment near home in practically every section of the country. Nevertheless, for those who can afford it, the right climate to be selected for the individual case has certain advantages.

The best of climates is not to be recommended for any patient who might suffer any undue strain in mind, body or purse to obtain it. For practically every patient, the proper treatment means sanatorium treatment at some time during the

course of the disease, this preferred at the beginning in nearly every case. To delay or temporize is to court disaster and eventual failure.

The leading medical authorities agree that hospitalization of the tuberculous has played an important part in the decline of this disease. It has been stated that the death rate from tuberculosis is lower in communities showing the highest average hospital days per tuberculous patient. It is quite important, therefore, to impress upon the tuberculous patient the advantages of sanatorium treatment versus treatment at home. The added expense of sanatorium treatment would be justified in the earlier return to work and financial independence of those afflicted with the disease.

Close observation must be maintained not only up to the time when the patient may be discharged from a sanatorium but during the subsequent periods when, under the supervision of a physician or skilled social worker, he is being trained gradually to return to his former occupation. The usual penalty for the lack of such supervision is a probable recurrence of the trouble with less probability of recovery.

PHYSICAL EXAMINATIONS

In the industry with which I am associated there was an apparent increase in 1927 in the number of incipient tuberculosis cases among the 25,000 employes, one-third of whom are women. However, a detailed study and analysis of all cases proved that this increase in the number of cases reported was due not to unfavorable working conditions but to a policy of the medical department to examine thoroughly for potential tuberculosis every employe who reports to the hospital because of illness, especially of the respiratory type.

In the physical examination of new employes special attention is given to the lungs and respiratory tract in order to detect any possible tendency toward tuberculosis.

In any industry, occasionally cases of tuberculosis will develop despite precautions. When such a case occurs, every effort should be made by the employer to assist the employe in his fight for health.

Many of the larger cities maintain and operate tuberculosis sanatoriums. The Municipal Tuberculosis Sanitarium of Chicago is such an institution. It is operated under the direction of a board of trustees of which the health commissioner is a member. This sanatorium enjoys a reputation for efficiency and high professional standards.

However, it usually is not possible for any municipality alone to provide adequate facilities for all the tuberculosis cases in the community. Industry, therefore, should establish a close contact with some recognized private or semi-public sanatoriums where industrial cases may receive proper treatment.

If we are to make further progress in the fight against tuberculosis in industry, industry itself must stand ready to support these institutions and their local tuberculosis associations.

Whole-hearted participation in such activities will bring dividends in community good will, lower manufacturing costs for the industry and better employe relations.

Naturally, in deciding upon the amount of financial assistance that the employe needs to secure adequate treatment, the employer must consider the patient's obligations to his family as well as his ability to finance himself during an illness which will last at least 6 months and may extend over a period of 1 or 2 years.

If an employe is eligible through membership in a company plan mutual benefit association, or disability insurance, to receive sickness benefits, any further help from the employer should be determined largely by the employe's family obligations and his available financial resources. In any event he must not be denied prompt and proper treatment for the disease.

Experience has taught us that it is advisable to discharge a patient from a sanatorium as soon as the case has been arrested. This practice is very effective in helping to maintain a good mental attitude. At the same time, the average patient at this stage has not usually recovered his health to the extent of returning to his former occupation on a full-time basis.

The real value to the man, in so far as his mental attitude is concerned, comes from the fact that in leaving the sanatorium he is returning to his former environment. This is effective in assuring him of the employer's desire to place him again at his former work as soon as he is physically able to perform it.

An employe with an arrested case of tuberculosis should not believe he must be treated differently from other people. He is not a menace to his associates even though occasionally there exists an impression that he is.

Drs. Vogeler and Lyman and many others have for years recommended that, wherever possible, the employe should endeavor to readjust himself to his old occupation.

In the book, *Advising the Tuberculous about Employment*, by Hamilton and Kidner, the following paragraph appears at the beginning of the chapter, "Selecting an Occupation":

> Generally speaking the tuberculous adult should be advised to seek employment in which he can capitalize the knowledge and skill gained through his previous life and employment experience. . . . A complete change of occupation is advisable only when there exists in the former occupation hazards known to be dangerous for the tuberculous.

In leaving a sanatorium, an employe is confronted with the problem of his medical supervision during the period of his readjustment in industry. This should rest with a representative of the medical department where such service is maintained by the industry, or with a physician who may be delegated for this specific work. During the time the employe is in the sanatorium, this representative should follow the case so that upon his release a rehabilitation program may be inaugurated with which the employe is in full accord. Throughout this training program, the length of which will vary with the physical condition of each employe, the medical department should give the employe frequent physical examinations and at least once a year a complete examination by a tuberculosis specialist.

If this supervised program is to be successful, it must include three aids to complete physical and vocational rehabilitation:

1. A hardening-up process of a somewhat more continued and scientifically constructed character than can be carried on at a sanatorium
2. A vocational training adapted to the patient's needs and temperament
3. Placement in work best suited to the patient's own physical condition and training

To insure the best results from such a rehabilitation program will necessitate an expenditure of money sufficient to meet the difference between a normal wage and the amount the employe may receive during the time he is being readjusted to industrial life. This expense is justified on the ground that such a program will shorten the period of absence after discharge from a sanatorium.

CONCLUSION

In conclusion let me briefly summarize the various points which I have attempted to emphasize throughout the presentation of this paper:

1. Tuberculosis is still the most destructive and fatal disease among wage earners.
2. Tuberculosis is communicable, preventable, and curable.
3. After an early diagnosis of tuberculosis is confirmed, it is necessary that the patient receive prompt treatment.
4. Successful treatment requires supervised care, preferably in a sanatorium.
5. The death rate from tuberculosis is lowest in communities showing the highest average hospital days per tuberculosis patient.
6. Lack of accommodations in free tuberculosis institutions makes it necessary for industry to support and coöperate with private sanatoriums.
7. It is not only safe but advisable for an employe with a controlled, arrested case to return to his old occupation.
8. During a training period when the employe is being readjusted to his former work, a rehabilitation program should be carried on under the supervision of a carefully selected and trained personnel.

So much has been accomplished by the medical profession, municipal health authorities and such organizations as the National Tuberculosis Association and its affiliated bodies in the prevention of tuberculosis through education and clinics, that industry must now take its part in caring for employes who become afflicted.

The far sighted industrial leader will incorporate in his program of curative measures a very definite plan for the rehabilitation of arrested cases. This will be done not only for economic reasons but for humanitarian reasons.

Just as industry has reduced accidents and has found that it pays, so will those same industrial leaders learn that a reduction in time losses through sickness will likewise pay real dividends.

DISCUSSION *

C. W. Bergquist, Chicago, Ill.—I am not a physician but I am connected with a large Chicago plant which employs 25,000 to 35,000 workers, one-third of whom are women, and which has had an extensive medical and nursing department for twenty years. We find that preliminary medical examinations, which have been made for years, are very helpful to our employes as well as to the plant, and many persons predisposed to tuberculosis have been kept from working in situations which might have been hazardous to them. I take a decided issue with those who think industry should take no part in health education in a broad way.

Emery R. Hayhurst, M.D., Ohio State University, Columbus, O.—The survey by Mr. Coleman has shown that the industrial side of the problem of tuberculosis is realized in many parts of the country. Since the tuberculosis program is " sold " to the public it is decidedly advantageous to make use of it for advances against the 2 per cent or more tuberculous found in industry. The tuberculosis dispensary may well refer the cases found to the industrial medical service of the plants so equipped, which services ought to check up health hazards, particularly in regard to ordinary ventilation, overheating and stagnation in work places. But the dispensary should refer the case which comes from a small plant directly to the local health authorities, who should investigate the work place. I would not imply that the work place is the sole cause of the promotion of tuberculosis, but the 8 to 10 hours a day spent at work usually have a direct influence in the downhill course of the case.

I think the Philadelphia plan is to be commended to other cities. It has been pointed out that the rise and fall of tuberculosis mortality in England for the past 75 years is an economic problem—hard times, and even political measures, which depress industry, invariably resulting in higher rates.

While at the Dublin Congress at the Royal Institute of Public Health this summer, I heard a very interesting paper by Dr. P. C. Varrier-Jones, Director of the Papworth Village Settlement for Tuberculosis, the paper being accompanied by two films of the colony and its factories. There are some 2,000 tuberculous indi-

* Discussion here presented covered, not only Mr. Bergquist's paper but also Extension of Industrial Hygiene by Tuberculosis Associations in the United States, by Bernard S. Coleman, in the February issue, page 157.

viduals now employed in this colony, where the families also live, and all are under constant medical supervision. Such a colony demonstrates that a tuberculous person can work at various factory processes and improve in condition at the same time. Economic, social and psychic factors are all satisfied. Of course, the object of this colony is the cure of tuberculosis first, and manufacturing production second, although it is practically paying expenses.

The post-war industrial depression in Great Britain has appeared to result in lessened morbidity and mortality, probably because workers are out of the factories and in the open air, and the "dole" system is undoubtedly benefiting many of them. However, it is necessary to wait to see the effects on the tuberculous. I think we should regard tuberculosis as universal in the human race, much the same as weeds in the garden, and that it is only by constant supervision and "cultivation" that we can keep the disease down.

Many positive results have already been obtained through industrial efforts such as those pertaining to the printing and publishing industry. I am not convinced that the work place is the only place to search for tuberculous persons associated with a given plant, because only those who are at work at the time or period are examined, while past workers and occasionally those absent are overlooked. We would not think of gauging the status of measles in a community by the number of cases found in the school house at a given time, but we would search the neighborhood and look for past cases, and I think such should be done in searching out the industrial relations of tuberculosis.

Eugene L. Fisk, M.D., Life Extension Institute, New York, N. Y.—I have an idea that the peak rate of tuberculosis among young women appears unduly prominent because any publicity concerning women is easy to get. The real question is whether the tuberculosis rate for young women is decreasing more slowly than for young men.

J. A. Goldberg, Ph.D., New York Tuberculosis and Health Association, Inc., New York, N. Y.—We have been making a study of tuberculosis in the rock drillers of New York City, those in connection with foundation construction work, subways, etc., and we find that they suffer from silicosis and from tuberculosis. The medical side of the investigation has been conducted by Dr. Haven Emerson's Department in Columbia University. The report is shortly to be published in the *Journal of Industrial Hygiene*, but at this time I am able to state that the reported 2 per cent found in industry is far too low for those on this job; also, we could not get at many who were away from the job, sick at home, etc.

Daniel J. Kindel, M.D., Consolidated Coal Company, Inc., Fairmont, W. Va.—Dr. Wright has thrown a bomb shell by estimating industrial tuberculosis at 5 to 10 per cent instead of 2 per cent or lower. My company, which employs about 10,000 workers, would, therefore, have possibly 500 employes with active tuberculosis. It is a huge problem at any percentage, but we want a very careful study before we accept these figures. While our preventive medical service is still young, we have so far found nothing like this rate.

Eugene L. Fisk, M.D.—I know of an instance where a plant employs 10,000 workers with "no tuberculosis," according to the plant physician. Hence, why worry!—There is a lot to do here and we cannot feel overly proud of the country's record thus far. The "periodical health examination is a murderer," some say, but is this an emotional disturbance or a fact?

Wade Wright, M.D.—I am not a pessimist in any sense of the word. However, Dr. Kindel selects workers for coal mining, and the coal fields have always been known to have a low tuberculosis rate. I insist that the 2 per cent usually found does not show the true situation. It is probably nearer 5 per cent. The Metropolitan Life Insurance Company, after pre-employment examinations, sends about 200 persons a year to its sanatorium. Do not be deceived regarding the greatly decreasing prevalence of tuberculosis despite a declining mortality.

Volney S. Cheney, M.D., Medical Director, Armour & Company, Chicago, Ill.—The industry has a part to perform in taking care of tuberculous employes, but only a small part—healthful working conditions. Leave the home relations and social aspects to outside agencies organized for that purpose. Such is not a part of industry's job, although industrial managers from a humanitarian standpoint often do this. By many the individual is considered a part of the industry, but I say he is only a temporary part; this is, while he remains there. Hence, why take complete care of him? The insurance company is more concerned than industry in this. At present we have a difficult time in advancing the industrial medical department because it cannot show definitely where it pays, as in the case of other departments in the plant. We receive tuberculous cases from the Chicago Tuberculosis Institute and its dispensaries and coöperate by placing them in the most favorable locations in our plant. We ought to examine our employes more often, at least twice a year, but with 12,000 employes and a labor turnover of 150 a day, because our employes are proverbial floaters, we cannot afford to do it. Many of our workers are reëxamined several times a year as it is, since they go from one plant to another. Let the laborer share part of this burden and the industry will do its part.

A. J. Lanza, M.D., Metropolitan Life Insurance Company, New York, N. Y.—The points of view here presented are not so far apart as might be thought. Each speaker gives only his own experience and viewpoint and these tend to distort the whole picture. The intelligent employer (and the big employer is usually an intelligent employer) is more and more recognizing that the employe's health and welfare is an industrial responsibility. It is there whether he likes it or not. The employer is forced to recognize it because of economic pressure. In Chicago I saw a plant employing 800 high-class machine tool workers where, to maintain their production, the management gives attention to many things, such as the food eaten by the employes, illumination, ventilation, even the use of the newer type of window glass admitting ultra-violet rays, annual examinations of the eyes, etc., etc. All this is done because they feel it helps them to meet competition and to maintain their reputation for reliable goods.

Eugene L. Fisk, M.D.—The touchstone is evidently coöperation, not paternalism. The employe is a copartner and, if treated so, he will stay on the job; therefore his health interest, from all points of view, is a part of the necessary organization.

Tuberculosis in Racial Types with Special Reference to Mexicans*

BENJAMIN GOLDBERG, M. D.

Municipal Tuberculosis Sanitarium of Chicago, and the Department of Pathology and Bacteriology, University of Illinois College of Medicine, Chicago, Ill.

THE health of the people is the supreme law." The physical and mental stamina of the individual determines the physical and mental stamina of the race. One would suppose that legislators and lawmakers, both state and national, who are responsible for the peace, happiness and prosperity of the state and nation, should also be responsible, in the larger sense, for national public health, without which there can be neither peace, happiness, nor prosperity. Comparatively few physicians seriously enter the field of politics and comparatively little attempt is made by the medical profession to influence legislation in the matter of big race health policies.

If it is a question of importing livestock from abroad, special consideration is given to the quality of the stock, the breed, the ancestry, prevalence or absence of disease or epidemics, and the susceptibility of the given breed to epidemics or disease in their new environment. Even in the matter of livestock shipments between the states, certain laws and regulations are enforced for the purpose of protecting the animals which will be exposed to the new arrivals.

Let us now consider human immigration. To the eye of the public health man the barriers and weirs erected in the stream of human immigration are inadequate and too few. The stream is not analyzed for its health inheritance, for its resistance to disease, for its health reaction to its new environment.

Fortunately, the health inheritance of our immigrants, for the most part, is the health inheritance of the older, civilized races. Most of the races admitted have run the gamut of disease, have had bitter experience with tuberculosis, syphilis, acute contagious diseases, have, perhaps, as far as the individual disease is concerned, gone through the ordeal of the "survival of the fittest," have lost uncounted numbers of susceptibles and finally, at the end of a trail beset with suffer-

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928.

ing and disease, have reached the haven of comparative racial immunity. Some of the European peoples coming to our shores, for instance the Swedish and Irish, have not, perhaps, passed all the way along the trail.

There are, however, other races not of the old European stock, who seek admission to the United States, whose entrance in considerable numbers must under present circumstances be considered as a public health menace. The public health man is not inclined to accept the famous saying of Thomas Jefferson at its face value. If Jefferson had been conversant with present-day problems in public health, he would have had to modify his statement that "all men are created equal."

The official interested in public health must realize, as a first principle, that all men are not created equal; that there is no equality between either the health of individuals or the health of races; that there is a health heredity as part of the biologic heredity; and that health heredity is vitally different in different races. Even the health heredity of the various population units in the United States—the difference in racial susceptibility to disease—has always been with us a burning public health problem.

The Indian, within the confines of the United States, met civilization and was overwhelmed by the diseases of the white man. He was unsuited in every way for urban life. He alone was the loser; his race died out without serious repercussion on the health of the white man.

The negro offers a public health problem of a different nature. Prior to his contact with white civilization, and immediately after his entrance into this country on the plantations of the South, he was practically free from tuberculosis. Today the negro is tending more and more toward urban life, and coming in greater and greater numbers to highly tuberculized communities. Frequently he is infected with tuberculosis in the urban centers and spreads infection both among his own race and among the whites.

In Chicago, in 1927, the negro mortality was 401.8 per 100,000, over 6 times the mortality of the white race. Nevertheless, he is adaptable and in time will, without question, develop sufficient relative immunity to enable him to cope successfully with city life. Meanwhile, the process of immunization is costly. The care and supervision of the negro in the matter of tuberculosis alone over the time during which he is increasing his resistance to civilization diseases necessitates the expenditure of huge sums of money.

At the present time in Chicago we have 8 tuberculosis dispensaries for the entire population, and of these, 3 are devoted almost entirely to the service of the negro. This means that while the negro consti-

tutes only 5 per cent of our population, he is receiving 37 per cent of our tuberculosis service. Last year $836,021.30 was expended by the Municipal Tuberculosis Sanitarium for field work in Chicago. On the basis already stated, $309,327.86 was expended on the negro receiving the services of these 3 dispensaries.

The negro, as an essential element in our American population, is entitled to this greater consideration, and this increased expenditure. He is an American citizen, entitled to all the prerogatives and rights of such citizenry. Both for his own sake and for the sake of the white race his problem must be met as effectively as possible; he must be given, during his probationary period in urban life, all the safeguards that science can command.

There is, however, another race which has no demand on us and which is rapidly introducing among us a health problem as serious as or even more serious than the health problem of the negro. I refer to the Mexican. We seem, throughout the United States, to be asleep to the menace of the immigrant Mexican. Confronted with the problem in Chicago, I took occasion to investigate the literature and was amazed to find that practically no consideration has been given to this problem in this country. In view of this, I took occasion to write to the health officials in states and communities which have a large Mexican population and was surprised to learn that even in those communities in which the Mexican was admittedly a most serious health problem, no thorough data had been compiled and no effective remedial measures even suggested. The Mexican is coming in thousands, bringing with him his health standards, his susceptibilities, bringing potentialities for deterioration in national health which few of us even begin to realize.

TUBERCULOSIS IN THE PRIMITIVE RACES

Before going further with the subject of the Mexican as a health menace, it may perhaps be advisable to roll back a few pages of history and study the reaction of the so-called primitive races to civilization and to its diseases, particularly tuberculosis.

The American Indian—We see very little in recent literature concerning tuberculosis and the American Indian. The Indian has, unfortunately, solved his own problem—he is dying out. However, in the literature of a couple of decades ago, many terrible descriptions are available concerning the inroads of tuberculosis among the American Indians.

Coming down to recent times, we find that in the mortality tables covering the U. S. Registration Area for the year 1924, the total mor-

tality from tuberculosis in Indians was 680.3 per 100,000. The estimated total population of the Indian in the same area in 1924 was only 98,920, and of this number 673 died of tuberculosis in one year.

Further examples, considering tribe after tribe, might be furnished to demonstrate the devastation wrought by tuberculosis among American Indians. The Indian, as explained, was the only one to suffer. Fortunately for the white man, the Indian was inadaptable to city life; he did not migrate to the city, and did not, in consequence, broadcast tuberculous infection among the whites. If he had developed the qualifications of a city dweller, the Indian would have constituted a serious public health problem; he would have added fuel to the flames, thrown oil on the smoldering embers and, undoubtedly, many of his white brothers would have been consumed with the Indian in the conflagration.

This is a point not sufficiently realized. It may be thought because the Indian, ravaged with tuberculosis, has had little influence on general health in the United States, the same proposition will hold concerning the negro and the Mexican. It must be emphasized, however, that the negro and the Mexican do not live apart in reservations; they live in densely populated urban centers in contact usually with the lower grades of the white race. These classes of whites, owing to economic conditions—food, housing, etc.—are the members of the white race most prone to tuberculosis. It must be quite obvious then that the increased tuberculosis morbidity in the negro and the Mexican will have its repercussion on that portion of the white race which comes into close personal contact with these susceptibles.

The Filipino, the South American Indian, and the native African all have had cause to regret the white man's civilization. The ravages of tuberculosis in these and other primitive races have been in direct proportion to the degree of intimacy and contact with the coughing white man.

The Negro in This Country—As already intimated, the negro in the United States constitutes a tuberculosis problem entirely distinct from that of the Indian. The negro is rapidly being urbanized, and this undoubtedly increases the tuberculosis mortality and morbidity in the negro race.

A review of the situation must make it clear that this urbanization of the negro cannot take place without having a deleterious influence on public health in general. The negro from the South is being swept in ever increasing numbers into highly tuberculized communities. He there meets infection and is infected; he there also helps to spread infection. He has many points of contact outside of his own race, and

acts as a medium for further dissemination of tuberculous infection in the community. The negro tuberculosis mortality in Chicago is double or treble what it is in the cities of the South. For instance, in 1926, in Mississippi, it was 161 per 100,000 as against a negro mortality in Chicago of 389 per 100,000 in the same year.

Notwithstanding an intensive campaign, and despite all measures at our command, the tuberculosis death rate in Chicago has, during the past few years, shown a slight increase. The lowest tuberculosis death rate recorded for the City of Chicago was in 1922 when the rate was 78.3 per 100,000. This rate has gradually risen until in 1927 it reached 82.7 per 100,000. Statistics indicate that this rise is due to the greatly increased number of susceptibles in our population.

The outstanding fact revealed by these figures is that among the white elements in our population, the mortality rates have definitely improved. The improvement, however, is not reflected in the general mortality rate because it is more than offset by the increased tuberculosis mortality in the negro.

Mexicans—In 1927, 68 Mexicans died of tuberculosis in Chicago. These Mexicans were classed as white on the death certificates; therefore, in estimating our white mortality we must deduct these 68 Mexican deaths.

In discussing the magnitude and complexities of the negro health problem we have but one object in view. Public health men throughout the country understand and evaluate this problem with sufficient precision. It is used merely as a yard stick for the measurement of another tuberculosis problem which menaces us, and which, if steps are not soon taken, will prove even more serious than that of the negro. The Mexican of tomorrow will bring to our towns and cities dangers which will strain the resources of the local and national public health agencies to the utmost. We have discussed the subject of tuberculosis in primitive races merely to bring out the ravages among the Mexicans as they go through the process of urbanization. We have tried to indicate that in this process the Mexican will not be like the Indian, for he will not suffer alone; he will be infected and in turn will broadcast tuberculosis in the community. Like the negro he has and will have many points of contact with our native American population. As Mexican immigration increases he will have still more points of contact. It is a question that we must face now or submit to serious consequences later.

Shall we allow the Mexican, who has no claim on us, to develop in our midst the same serious problem that the negro, who has a claim on us, has developed? Shall we allow the unrestricted immigration

of susceptible aliens? Shall we allow them to go through the process of urbanization in our communities, and to undergo the complex, little understood and tedious process of resistance development? Are we logical if we protect with one hand and destroy with the other? Are we logical if we try to use all scientific means to protect our native American population from tuberculosis, and at the same time allow an unrestricted stream of susceptibles to enter our communities to become exposed and to kindle the fires as fast as we extinguish them?

PRESENT STATUS OF IMMIGRATION LAWS

Until 1924, Mexicans were permitted free entry to the United States. Starting in 1924, the Mexican immigrant was required to pay an $8.00 head tax and a $10.00 visé fee. He was also supposedly obliged to pass a medical examination and literacy test, but this has not been enforced. He was, strange as it may seem, not on a quota as are the European nations.

Statistics quoted by Kenneth L. Roberts in articles appearing in the *Saturday Evening Post* show definitely a marked increase in Mexican immigration. In 1907 only 91 Mexicans entered the United States through the portals of legal entry. In 1926, 66,000 Mexicans immigrated to this country. In addition, all authorities concede that at least as many Mexicans enter the United States illegally as enter legally each year.

MEXICAN POPULATION IN THE UNITED STATES

In the opinion of Mr. Roberts, there are at present in the United States 3,000,000 Mexicans, that is, individuals either born in Mexico or with one or both parents born in Mexico. This estimate does not, of course, take into consideration the great population of the Southwest, which is of Mexican descent.

Since 1920 the stream of Mexican immigration has steadily increased. The immigrants, pouring first into the Southwest, California, the orange groves, the industries and mines, later, in ever widening circles come to the beet fields and orchards of Michigan, and to the factories and mills of Detroit, St. Louis, Chicago. The fruit and vegetable growers of the Imperial Valley of California, the industrialists and mining magnates of the Southwest, the railroad magnates, the factory owners, the industrialists of the West and Middle West, must have their Mexicans. The good news travels. The Mexicans in their native country hear of riches, opportunity, good food, free hospitals, and free medical care in the United States. They hear that they can earn in a day what they cannot earn in a week in Mexico.

They are not bothered by the head tax or the visé. The Rio Grande is long, their hopes are high, and they come to the Eldorado.

Good health and proper living standards are related. What are the Mexican's standards of living? In Chicago he lives either in the box-car or in the colony.

If he makes his home in the box-car he lives where his job is. Half a dozen or more obsolete box-cars are drawn up on an unused railroad siding; they have been slightly altered and furnished in primitive fashion for habitation purposes. There is usually no provision for light or ventilation except by means of the door. As space is a consideration, as many Mexicans as possible are crowded into a restricted space. There is, of course, no running water, in fact, very little of any kind of water, and there are no toilet facilities. The Mexicans in these box-cars are in the position of Trudeau's rabbits in the cellar. Susceptible as they are, it is difficult for them, under such circumstances, to escape infection if one of their number is tuberculous.

The Mexican colony is a crowded, unhygienic home, where there are congestion, open tuberculosis and exposure.

THE TUBERCULOUS MEXICAN IN CHICAGO

Though there are many other health problems which the Mexican brings with him, this paper is confined to the problem of tuberculosis. In 1927, 387 Mexicans were admitted to the general wards of the Cook County Hospital. The situation became acute and it was borne in on us that energetic measures were necessary. A survey was consequently planned and carried out along the following lines.

The nurses were first sent out into the districts and instructed to locate, as far as possible, the Mexican families. Five nurses and five physicians were assigned to the work. The nurse first called on the families and made appointments for examinations. The physicians who did the examining called, for this purpose, either in the evening, on Saturday afternoon or Sunday morning. It was realized that home calls made by the physician during regular working hours would be ineffective; the wage earner, who was often the affected one, was at his work in the railroad yards or the stock yards and could not, of course, be examined.

In this survey, out of a total of 1,197 Mexicans examined, 24 were diagnosed as tuberculous, and 254 were placed under observation as suspects. In other words, 2 out of every 100 Mexicans examined were affected with tuberculosis, either pulmonary, bone or gland. According to these figures the morbidity in Mexicans is 10 times greater than that in the general population.

In 1928, there were 534 Mexicans under the supervision of the Municipal Tuberculosis Sanitarium. Of these, 380 were classified as observation cases or suspects; 154 were definitely diagnosed as tuberculous, of whom 83 were cases of pulmonary tuberculosis. Accepting the Consul's estimate of 7,000 Mexicans in Chicago, we have, therefore, a ratio of 12 pulmonary cases for every 1,000 population. This figure is to be compared with the ratio of 3 pulmonary cases per 1,000 population, considering all nationalities.

The mortality rate indicates a truer picture. In 1927, 68 Mexicans died of tuberculosis in Chicago. From these figures we are amazed to note that 12 Mexicans died of tuberculosis in Chicago for every 1 Chicagoan of the general population who succumbed to the disease.

A detailed study of 230 charts of the pulmonary cases showed that 93 per cent of the patients in question were in Chicago for a period of 5 years or less; 86 per cent were in Chicago 4 years or less; 24 per cent, or one-fourth of the patients, had been in the community less than 1 year. It must be unequivocally evident, then, that the Mexican in Chicago, as elsewhere, is a serious social liability.

As a further check-up a survey of the Mexican patients treated in the tuberculosis ward of the Cook County Hospital was undertaken by one of our dispensary physicians, Dr. J. J. Mendelsohn. It was found that Mexican admissions for tuberculosis amounted to 15.2 per cent of the total Mexican admissions to the hospital.

With regard to the occupation of these 63 patients treated at the Cook County Hospital, the tabulation brought out the fact that practically all the Mexicans were unskilled laborers. The Mexican is below medium stature, of inferior muscular development and under excessive labor demands will rapidly break.

It was found that 85 per cent of the patients were in the later stages of the disease when admitted to the hospital. It is evident, therefore, that the Mexican is difficult to reach with public health measures. He shuns doctors and clinics and spreads infection freely in the community until forced, by absolute physical disability, to seek help.

It was found that 19 per cent of the Mexicans in the tuberculosis ward of the Cook County Hospital had been in Cook County less than 1 year. Thirty-seven, or 64 per cent, had resided in Cook County for a period less than 3 years. The mere statement of these facts should be sufficient to emphasize the urgency of our Mexican tuberculosis problem. At the present time we have a population of only about 7,000 Mexicans. This population, however, is rapidly increasing, re-

cruited from the west by primitive Mexican stock coming to Chicago as transient labor.

In 1927, 50 Mexican-born patients died of tuberculosis in Chicago. Of these 50 patients 32, or 64 per cent, died as charity patients in the Cook County Hospital. While statistics on the point are not available at the moment, it is safe to say that practically all of the remaining 18 patients were subjects for charitable care and assistance.

It was found that 47 per cent of the patients died within 1 month after admission. The summary of Mexican deaths from tuberculosis brings out two facts: First, it emphasizes the observation already noted that the great majority of patients come to Cook County Hospital in the advanced stage of the disease; and second, that the Mexican, like other primitive races, is subject to acute and subacute types of tuberculosis.

Our tables also indicate a progressive increase of Mexican deaths in our charity institutions. In 1922, with an estimated Mexican population of 2,500 we had 12 Mexican deaths from tuberculosis at the Cook County Hospital, while in 1927 from a Mexican population of 7,000 we had 32 tuberculosis deaths in Cook County Hospital. In each instance, therefore, 5 Mexican patients died in the Cook County Hospital for every 1,000 of Mexican population. We see, consequently, that the problem multiplies as the Mexican population multiplies and in exact, direct ratio.

SUMMARY

Our political and social leaders are not sufficiently interested in the race problem as it affects health. The industrialist and agriculturist in the West and the Southwest, in importing Mexican laborers, are also importing a race "sizzling with susceptibilities." In view of this fact a thorough physical examination of every Mexican immigrant is a public health essential.

The public health official is "tilting at windmills" in his attempt to reduce tuberculosis mortality if tuberculous susceptibles are allowed to flock into his community in droves. The Mexican will not, like the Indian, suffer or die alone, but will increase dissemination of infection in the community in which he was infected.

The immigration laws which restrict the quota of some of the older European peoples, comparatively immune to tuberculosis, are not effective in restricting the immigration of Mexicans, a race highly susceptible to tuberculosis. The gain to the industrialist in cheap wages is more than counterbalanced by the loss to the taxpayer in increased charity expenditure.

The 7,000 Mexicans already in Chicago constitute a problem. Who will solve the problem when the Mexican population amounts to 200,000 or 300,000? With an estimated negro population of 170,000 it has been found necessary to devote 3 of our 8 dispensaries, or 37 per cent of our entire tuberculosis facilities, to the care of the tuberculous negro. The Mexican in urban life, according to figures available, is even more susceptible than the negro. An increase in Mexican population to 150,000 or 200,000 would practically monopolize the remaining 5 dispensaries. As dispensary operation costs on an average $104,502.66 per year for each dispensary it will be readily understood that the increased expenditure will be an enormous drain on the taxpayers.

REMEDIAL MEASURES, IF ANY

We have considered the problem from its various angles. Is there any remedy? The pessimist will say that the problem is out of the hands of the public health officials, that immigration officials and political leaders are not sufficiently impressed with the seriousness of the question to propose or enforce sufficiently energetic measures.

We believe that at least some of this laxity on the part of our lay officials can be laid at the door of public health and professional men. We do not make sufficient effort to educate the members of our state and national legislative bodies concerning the important health questions of this kind. We have made no effort, as far as I am aware, to reach the industrialist and agriculturist who are prime factors in the importation of Mexican labor. They can, however, be convinced that their success and prosperity are bound up irrevocably with the health and prosperity of the community and that part of the taxes for increased charitable expenses will have to come out of their pockets.

Health agencies, municipal leaders and the officials of social agencies should make greater effort to gather dependable statistics relative to Mexican immigration. They should present these statistics through the proper channels at Washington and allow the figures to speak for themselves. This should result in placing on the statute books an immigration law which would cope not only with this situation but with any subsequent public health problem of a similar type that may arise, and would in some measure offer a health protection to the American citizen.

All peoples of all races seeking admission to the United States should be subjected to thorough physical examinations, and in those races that are susceptible to special diseases, as is the Mexican to tuberculosis, special attention should be given to that particular disease.

Almost every large city in this country has, in its sanitary code, housing laws which should protect the individuals adequately against the danger of a contagious or infectious disease through congestion or overcrowding. Laxity of enforcement of such regulations should, in the presence of a menacing condition, be laid at the door of the health officer responsible for such enforcement. The box-car on the railroad siding should come under this category and be controlled from this standpoint. In the event that interstate travel is an evading issue for this type of movable home, the U. S. Public Health Service would, we feel certain, control such a situation.

If adequate housing facilities were provided by the industries utilizing this type of labor, and individual segregation in the home were possible, a lessening of congestion would result in a lessening in the spread of disease.

The industrialist, educated to the danger which occurs in the employment of basic, primitive races, should be educated further to provide an adequate medical inspection and examination service in order to detect the disease in its early stage, and weed out the physically unfit, thereby also preventing the spread of the disease.

Our federal statutes allow the deportation of any individual who enters this country, resides here for a period of less than 5 years, and becomes a public charge by virtue of physical disability or other cause. This deportation legislation, unfortunately, is not utilized to the extent that it should be in the various communities throughout this country, and consequently the financial burden in such communities, from the public health standpoint, becomes very large.

CONCLUSION

We in Chicago, as in other cities throughout the United States, are face to face with a special menace, and this special menace demands special measures. We need action; it is not the moment for passivity or indifference.

BIBLIOGRAPHY

Mendelsohn, J. J. Tuberculosis among Mexicans in Chicago, *Illinois M. J.*, Jan., 1928.

Primitive Tribes and Tuberculosis, *Tr. Soc. Trop. Med. & Hyg.*, June, 1912.

Foerster, Professor Robert, Princeton University. *Report to Secretary of Labor, United States Government. 1925.*

Roberts, Kenneth L. Wet and Other Mexicans, *Saturday Evening Post*, Feb. 4, 1928.

Mexicans or Ruin, *ibid.*, Feb. 18, 1928.

The Docile Mexican, *ibid.*, Mar. 10, 1928.

McComb, Vernon M. Foreign Language Information Service, 1924.

Report of Bureau of Tuberculosis, June, 1926, California State Board of Health, Edythe Tate Thompson, Director.

A Statistical Study of Sickness among the Mexicans in the Los Angeles County Hospital, July 1, 1922, to June 30, 1924—Bureau of Tuberculosis, California State Board of Health.

Sweet, Ernest A. Interstate Migration of Tuberculous Persons, *Reprint No. 269, Pub. Health Rep.*

Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium, May, 1927.

DISCUSSION

GODIAS J. DROLET

Statistician, Research Service, New York Tuberculosis and Health Association, New York, N. Y.

THE Chicago tuberculosis authorities and Dr. Goldberg should be congratulated upon their open-mindedness in placing before the Vital Statistics Section of the American Public Health Association their Mexican tuberculosis survey results before their publication.

Dr. Goldberg would modify the statement of Jefferson that "all men are created equal." I agree with him that undoubtedly all men are not *now* created or born equal—but human flesh was originally and it may even be said that under similar *previous* and *present* environments it is being created equal. Tuberculosis susceptibility or resistance can, under similar circumstances, be developed equally.

Personally, I do not like the phrase about the Mexican that he is of "another race, which has no demand upon us." We stripped the Mexican of California, Arizona, New Mexico, and of Texas. Now, when he is willing to labor for us, we would begrudge him life itself. Knowing the inherent devotion of Dr. Goldberg to the sick, I do not think he really intends all the implications of such a statement.

The Mexican is indeed a composite Indian-Negro-Spaniard, descendant of races all accustomed to sunlight and fresh air. He must, indeed, suffer terribly in the dusty, cloudy, choking cities, but may it not be, just as the negro has been found relatively immune and more resistant to hookworm infection and to certain digestive disturbances, that the old Indian stock does bring along favorable genes against the vagaries of American climate—with possible beneficial qualities against the high pneumonia incidence now prevailing in the implanted human stock in America—and some better body growth capacities, upon native food (corn, tomatoes, potatoes), than Europe's transplanted flowers.

The best contribution of Dr. Goldberg's paper is, of course, the figures of the Mexican survey in Chicago, and the results of the actual examination of 1,197 individuals of that group.

From their findings, the Chicago authorities compute a tuberculosis morbidity rate of 20.05 per 1,000 examined, and say that "in Mexicans it is 10 times greater than in the general population," basing this upon the fact that 7,798 cases of tuberculosis were reported in that city last year, and therefore that they had already figured a general tuberculosis morbidity of 2.51. But in the above, first of all, the ratio of 2.51 to 20.05 is not 10 to 1, but only 8 to 1; second, there is a statistical error in attempting to compare the two on the same basis. The Chicago morbidity rate of 2.51 is for only *new* cases reported in the city during the year, and not for the total old and new in the entire city on a given date (which is usually at least twice as high a number), whereas the Mexican figures are for the total tuberculous in their group on a given date, including both new ones of recent accession and perhaps, as in any other group, the old ones of a previous year. Furthermore, the Mexican figures are based upon a presumably thorough examination and complete reporting of all their cases, whereas the general Chicago figures are of no such careful and complete origin. In my opinion, therefore, I would first say it is probable that the total tuberculosis incidence rate of Chicago on a given date is perhaps 5 per 1,000 population, and that the Mexican morbidity ratio to that of the general

population is nearer being under 4 to 1. This necessary correction, however, certainly does not break down the seriousness of the figures of the incidence of tuberculosis among the Mexicans in that city, though it may reduce their relative importance.

Considering the mortality rate among Mexicans of 970 per 100,000 we have, however, in Dr. Goldberg's figures an undoubted evidence of the seriousness of the situation in this group.

The necessity for finding remedies against tuberculosis brought in by new racial groups is well expressed by Dr. Goldberg. Personally, however, I question whether merely a thorough physical examination of incoming Mexican immigrants will be the solution. That type of examination does not sort out susceptibles; it would not exclude a husky, handsome, strongly built Irishman, or a blue-eyed Scandinavian arrival, and yet both, under actual test of city life, may break down most piteously with tuberculosis. Shall it be a tuberculin test? shall it be a careful history taking? shall it be but a general realization of the disease susceptibilities of certain groups, and a particular consideration of the specific dangers they will encounter? or shall it be a more definite supervision in cities of such groups? It is hard to say what is the solution, but all must be thought of.

Chicago should be congratulated upon the earnestness and ability with which their tuberculosis authorities are facing their responsibilities. Dr. Goldberg has helped us to appreciate once more that the tuberculosis problem in our cities reflects a composite picture, deeply affected by the various racial groups already within, or coming into the community, and that he offers us a practical example on how to face it by study and intelligent attention.

Child-Welfare Work of the Sickness Insurance Funds in Germany

THE sickness-insurance funds of Germany, which are a part of the compulsory social insurance system of that country, have been devoting particular attention to child welfare work in recent years.

Considerably more than half of the sickness-insurance funds have extended their sick benefits to the children of insured persons. Preventive work with children has been emphasized, and as part of this work provision has been made for dental treatment and gymnasiums, ultra-violet ray clinics, clinics for diseases of the throat and nose, etc. Moreover, in recent years the sick funds are also making greater provision for treatment of children of insured persons in recuperation homes and sanitariums.—*Zentralbl. f. Jugendrecht und Jugendwohlfahrt*, Berlin, Sept., 1928, p. 158.

Health Demonstrations*

GEORGE C. RUHLAND, M. D., FELLOW A. P. H. A.

Health Commissioner, Syracuse, N. Y.

WITHIN the past ten years or so there have come into existence, especially in the United States and Canada, undertakings of a specialized kind that are commonly referred to as "health demonstrations." They are all more or less of the kind for which the well-known demonstration at Framingham may be taken as the prototype.

Among these demonstrations may be listed: the four receiving aid from the Commonwealth Fund,[1] at Fargo, N. D., Athens and Clark County, Ga., Rutherford County, Tenn., and Salem, Marion County, Ore.; those helped by the Milbank Memorial Fund[2] in Cattaraugus County, N. Y., Syracuse, N. Y., and the Bellevue-Yorkville District of New York, N. Y.; the demonstration in Mansfield, Richland County, O.,[3] toward which the American Child Health Association and the Red Cross gave support jointly; the demonstration in Montreal[4]; the work in the East Harlem Health Center, New York, N. Y.[5]; and the special tuberculosis study in the Dubois Health Center, Detroit, Mich.[6]

It seems entirely proper to mention, in this connection, also the contributions by the Rockefeller Foundation[7] to the budgets of rural health service in 207 counties in 24 states, as well as the coöperation of the U. S. Public Health Service[8] in demonstration projects in 86 counties, or districts comparable to counties, in 18 states.

This list of health demonstrations might be still further extended, without counting similar undertakings in foreign countries, by including cities in this country in which, through assistance from such agencies as the Commonwealth Fund, Rockefeller Foundation, The American Child Health Association, Metropolitan Life Insurance Company, and other sources, demonstrations in mental hygiene, child guidance and other specialized health problems have been undertaken.

As most of these undertakings have been operating for only a brief number of years, it would be unfair to pass judgment at this time on their value. Nevertheless, it seems permissible to venture some general observations on the subject of health demonstrations.

* Read before the Health Officers Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 17, 1928.

What has brought them into being at this time? What is the thought underlying the promotion of health demonstrations? On what plans are they undertaken? and are these sound? What response is there to them? Are they worth while? These are some questions that might properly be asked, and for which an answer seems, at least in part, available.

What has brought about the development of health demonstrations at this time? As an answer to this question, the following, quoted from the introduction of a report[9] by The American Child Health Association on 5 years of its activities, may conveniently serve.

> When, however, in 1920 the war draft figures were published, they gave a picture of conditions that startled us out of our complacency. They showed that about 70 per cent of all the men of draft age were physically below normal. At the other end of the line, we were told that 80 per cent of our children were born perfect. That meant in this great country of ours, with its comparative freedom from poverty, its ample space, abundant food supply and general excellence of climate, where, if anywhere in the world, children should have a right to health, that in the arc between birth and maturity were accumulating conditions which robbed the youth of this nation of their full heritage of health and happiness. Here in our own country was a job that challenged us.

This is the reason given by the President of The American Child Health Association for the formation of that organization, and this undoubtedly is the reason that has quickened the formation of the various undertakings of health demonstrations throughout the length and breadth of this country as well as elsewhere.

The stimulating or accelerating factor in the development of health demonstrations does not primarily seem to have been an appreciation of the economic value of human life. That appeal had already been ably made, in the *Report on National Vitality*, prepared by Professor Irving Fisher for the National Conservation Commission in 1909,[10] but had not been productive of any undertakings in the field of health conservation comparable with the present-day health demonstration movement.

It was obviously the emotional appeal of impressive statistics taken from the report of the Draft Board against the background of the dramatic setting of the recent war which essentially hastened the development of the special health activities known as "health demonstrations" within recent years.

It should be clearly understood, however, that in suggesting the emotional appeal as influencing the development of health demonstrations, this is to apply only to the acceleration of this movement, and not to the underlying motive which prompted their undertaking.

The justification for health demonstrations rests fortunately on a far firmer basis.

The foundation for health demonstrations is, of course, the same as for all other health work; namely, a recognition of the economic value of human life; an appreciation of the costliness, and therefore the undesirability of sickness; the right of society to protect itself against sickness, and its hurtful effects; an understanding of the fact that public health is made up of individual health, and an acceptance of practices and procedures tried and proved for the purpose of disease prevention and for the preservation and promotion of health.

There manifestly is in all of this nothing that marks or differentiates the work of health departments from that of health demonstrations, nor does it appear from all that is available on the work of health demonstrations that these are intended to function in any way other than in conformity with these fundamentals. There is nothing experimental about health demonstrations except in the technic of establishing modern health procedure in a given community, and in so far as the relationship of humans to one another is always experimental.

The purpose of health demonstrations and the reason for their being appear to be essentially this—an effort by demonstration to advance the education of the public in matters that have been tried and found good in disease prevention and health promotion.

The movement that has stimulated and is aiding health demonstrations recognizes that the chief difficulty in the way of realizing the possibilities in public health improvement arises from the fact that the public has not yet caught up in understanding and practice with the knowledge and facts which science or experience has obtained for us."

If appropriations for health work are not yet on a par with those for other departments of public service, it is because we have not yet made it sufficiently clear to the public that health is quite as important as, for example, education, or that we have not made clear the methods by means of which we can secure these benefits.

If preventable diseases still persist so largely it is because we have failed to impress the public sufficiently with the importance of their prevention or have failed to point out a practical procedure to secure their prevention.

If the cost of hospitals and institutions for the care of chronics and incurables is still mounting as a public burden, it is because we have not yet succeeded in getting sufficient understanding of the importance of: child guidance and mental hygiene, periodic health examinations (Dr. Glendening, notwithstanding),[12] and early, persistent treatment.

Health demonstrations have come into existence in response to the obvious necessity that the public must be further educated in the possibilities of preventive medicine and the fundamentals of personal hy-

giene; and that such education can best be accomplished by demonstrations; and because of the equally patent fact that health departments are largely without the means to undertake such educational work without financial assistance.

Funds for the demonstrations are essentially from private sources. In all instances financial assistance is qualified; that is to say, certain stipulations must be met by the community in which the demonstration is undertaken. Thus the demonstration work in rural sanitation, for which federal aid is requested through the U. S. Public Health Service, will not be granted unless the community agrees to pay at least one-half of the expense.[13] Aid from the Rockefeller Foundation "is conditioned upon substantial contributions from other sources," and is further qualified in that it is only for demonstration of innovation and improvement. The fund withdraws entirely from a project as soon as it has become self-directing and self-supporting.[14]

The same policies govern contributions from the Commonwealth Fund, the Milbank Memorial Fund, the Metropolitan Life Insurance Company, the American Child Health Association, and other agencies. In all instances development of service by and through local official agency is sought, so that the activities developed may become permanent.[15, 2, 16]

Initiation and support of demonstrations are further conditioned upon invitation by proper local official authorities and community representatives, and the local medical profession; and qualified by geographical location, local needs and facilities and assurance of coöperation.

The plans for different demonstrations have varied, according to the special interests of the contributing agency. Thus the demonstrations receiving aid from The American Child Health Association and the Commonwealth Fund center upon child welfare; others, like those in Framingham, Montreal, and Detroit, center upon tuberculosis, etc. The demonstrations receiving grants from The Milbank Memorial Fund follow a general health program, as do the rural health demonstrations receiving help through the U. S. Public Health Service.

It is of interest to note that in all of the demonstration fields where the program was conceived primarily as a specialized service, the work sooner or later broadened into a more or less general health program.

It is of interest also to consider the experience in the various demonstration areas as to the time required for the accomplishment of work undertaken. For obvious reasons the contributing agency cannot commit itself to a program of support for an indeterminate length of time. The general plan followed stipulates that the community in

which the demonstration is carried on will, within a certain number of years, take over such service as appears essential to its needs, for which the contributing agency primarily has advanced the necessary money.

In Framingham the original plan called for a 3-year program. However, the demonstration was prolonged for 7 years. The demonstrations carried on through the coöperation of the Commonwealth Fund, as well as those aided by the Milbank Memorial Fund, are planned on a 5-year time limit. The latter agency has, however, at the invitation of the communities in which it assists, considered favorably the advisability of extending the time limit.

In the foregoing has been briefly sketched the growth of health demonstrations, especially in the United States; the underlying thought in their development; the general policies, plans and period of their operation. There remains the all-important question—Are they worth while? No final and conclusive answer can be made to this question at this time. However, the following points may be made from a study of the reports of the various demonstrations available thus far:

1. The purpose of these health demonstrations—to advance public health education by demonstration—is unquestionably good.

2. The plans and policies of the demonstrations—to work only where wanted; to work through and not on a community; to have the local community share in the financial responsibility of undertakings and to withdraw as soon as the local project has become self-supporting and self-directing—are likewise sound.

3. Time limitation for demonstrations, necessary from the viewpoint of the contributing agencies, has had a tendency to force the development of progress in some demonstration areas, creating difficulties in administration.

4. A fixed program with specialized objectives is an evident advantage for the initiation of health demonstration work. It seems important, however, to keep the program elastic so that it can be shaped to suit special local needs and interests. Sooner or later all demonstrations broaden out into a general health program.

5. Growth of demonstrations indicates public approval. The request to continue demonstrations beyond the originally stipulated time agreement is especially suggestive of this conclusion.

6. The cost of demonstrations does not appear excessive, and has not so far exceeded $2.00 per capita anywhere. Whether this is adequate or not the future must determine. The public appears willing to pay for the service, and budgets for health work have been generally doubled over their original appropriation within the time of the demonstration.

7. The demonstrations have in all instances brought about an extension of health service which, with few exceptions, has been maintained in full or in part after the withdrawal of the contributing agency.

8. The educational effect of demonstrations can obviously never be fully measured. In many instances it has, however, resulted in such tangible evidence as the improvement of water supplies, sewage disposal, proper milk and food control, building of schools, noticeable changes in the dietetic habits of communities, the

formation of health clubs, health conferences and other measurable services in standard public health procedure.

9. The experience with preventable disease in various demonstration districts has shown quite general improvement over pre-demonstration periods. In some instances results appear quite striking. Obviously these records must be treated conservatively.

It would be overlooking a material point in the experience of health demonstrations if nothing were said concerning certain difficulties that have been encountered in some demonstration areas.

It is rather disappointing that these difficulties should have arisen from within the ranks of the medical profession. Fortunately, however, it would appear that most of these difficulties can be cleared by getting over to the medical profession a better understanding of the purposes and methods of demonstrations. It is significant that where the profession is best informed, the work of the demonstrations has had its strongest endorsement and support.

The explanation of the difficulties encountered perhaps lies in the fact that the health demonstration movement has addressed itself too exclusively to the public, and has taken it too much for granted that the rank and file of the medical profession has kept pace with the trend of time, which also in the field of medicine is shifting from a purely curative practice to one which places emphasis more and more on prevention.

The practitioner of medicine must adjust himself to this inevitable change of which health demonstrations are merely an expression.

As an editorial in the *Journal of the American Medical Association* aptly puts it, "Today medicine—and particularly preventive medicine—is the property of all mankind. A progressive physician must be aware of his relations to the civic and economic problems of the community and the nation."

REFERENCES

1. Demonstrating Child Health, 1923–1927. The Commonwealth Fund Child Health Program. *Bulletin No. 4*, June, 1927.
2. *Annual Report of the Milbank Memorial Fund*, 1923.
3. *Five Years of the American Child Health Association*, 1927.
4. Personal communication, Dr. Boucher, Health Officer, Montreal, 1928.
5. Edwards, Bertha B. A Nutrition Program as Part of a Public Health Nursing Service, *Pub. Health Nurs.*, 18, 4: 168 (Apr.), 1926.
6. *Report Three Years Health Service in the Dubois Health Center*, July 17, 1928.
7. *The Rockefeller Foundation Review for 1924*.
8. Coöperative Rural Health Work of the Public Health Service in the fiscal year 1927, *Pub. Health Rep. Reprint No. 1184*.
9. *Five Years of the American Child Health Association*, 1927, pp. 3–4.
10. *Report on National Vitality, Its Waste and Conservation, Bulletin No. 30*, Report of Committee of 100 on National Health, Gov't Print. Office, 1909.
11. Farrand, Livingston. The Philosophy of Health Demonstrations, *A. J. P. H.*, Feb., 1927, Supplement.
12. Glendening, Logan. *The Human Body*, 1927, p. 170.
13. Coöperative Rural Health Work, *Reprint 1184*, U. S. P. H. S., 1927, p. 3.
14. *The Rockefeller Foundation Review for 1924*, p. 9.
15. Dinwiddie, Courtenay. The Commonwealth Fund Child Health Demonstrations, Proceedings of Second Annual Conference on Public Health, *A. M. A. Bull.*, 23, 8: 206 (Nov.), 1928.
16. Crumbine, Samuel J. What the American Child Health Association is Doing, *American Child Health Association Fourth Annual Meeting Transactions*, 1927, p. 13.

Modified Iodine-Pentoxide Method for Determination of Carbon Monoxide in Air and Blood*

MATHEW J. MARTINEK AND WILLIAM C. MARTI

Bureau of Laboratories and Research, Department of Health, Chicago, Ill.

THE danger from carbon monoxide poisoning in the large centers of population is becoming increasingly great. There is scarcely an industrial activity in which this gas is not encountered. The use of coal gas, water gas, and devices in which coal, oil, gas and gasoline are burned may be and often is attended by a danger to health when there is imperfect combustion or faulty ventilation. Automobiles also are contributing materially to air pollution, not only with irritating fumes but also with the invisible, colorless and odorless carbon monoxide gas.

The recognized effect upon health of small amounts of carbon monoxide continuously inhaled has brought an insistent demand for highly sensitive laboratory methods of quantitatively estimating this gas in concentrations as low as 0.1 part per 10,000 in air, and also in the blood of exposed persons. To meet this need our experiments were undertaken.

The first part of the experiment was devoted to altering and modifying existing methods and apparatus in order to obtain a method which would be accurate for very low concentrations. Methods such as the Orsat,[1] Blood Colorimetric,[2] Blood Spectroscopic,[3] Blood Pyrotannic,[4] and others were tried out but, although having many advantages, were eventually discarded as not fulfilling our requirements.

The method finally selected was the iodine-pentoxide method as modified by Teague,[5] which depends on the oxidation of carbon monoxide to carbon dioxide by iodine-pentoxide, and the accurate determination of the liberated iodine. It is based on the following reaction:

$$I_2O_5 + 5CO \rightarrow I_2 + 5CO_2$$

The report of the New York State Bridge and Tunnel Commission[6] was used as a basis for the construction of our apparatus. However, we introduced several modifications to improve the accuracy of the

* Read before the Laboratory Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928.

method and the simplicity of its operation. The apparatus as assembled (see Figure I) consists of a series of absorbing towers arranged in the following order: *C*, concentrated sulphuric acid, to remove a portion of the moisture; *E*, concentrated sulphuric acid heated to 150° C. by means of an oil bath *F*, which absorbs heavy hydrocarbons, most of the gasoline, and methane; *G*, cold, concentrated sulphuric acid, to catch any of the fumes liberated from *E*; *H*, *I* and *J*,

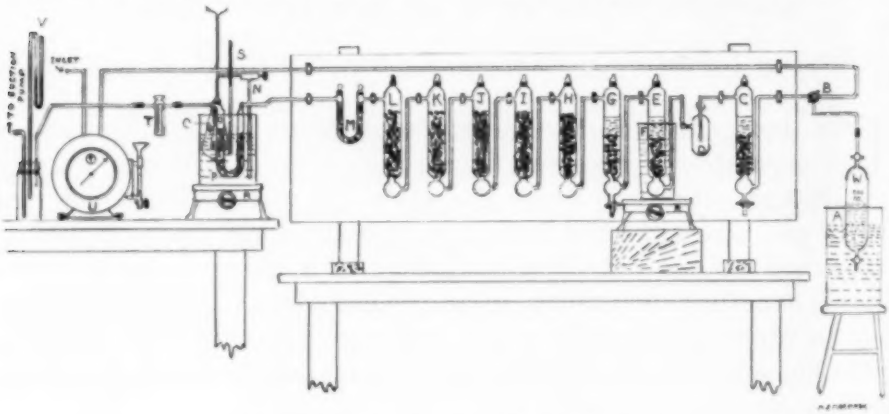


FIGURE I—APPARATUS FOR AIR ANALYSIS

activated charcoal, which removes the last traces of unburned gasoline and hydrogen; then a series of moisture absorbents consisting respectively of: soda-lime *K*, solid potassium hydroxide *L*, and dehydrite *M* (a mixture of magnesium perchlorate and trihydrate). These absorption towers are connected to a hard glass U-tube *O*, containing iodine-pentoxide, and immersed in a bath of oil *P*, kept constantly at 150° C. by means of a thermostat *N*, and electric light *Q* connected in series. All the towers are mounted on an upright board for stability and economy of space.

The liberated iodine is finally absorbed in a specially constructed absorption bulb *T*, containing 5 c.c. of 10 per cent potassium iodide. This bulb is in turn connected to a standard meter *U*, which registers the volume of gas flowing through the apparatus, and finally to a manometer *V*, which indicates variation in pressure of the gases flowing through the apparatus. The gas is drawn through the apparatus by means of a Bunsen vacuum pump. The inlet of the apparatus consists of a 3-way stopcock *B*, which allows either ordinary air or the sample of air to be tested to be drawn through the apparatus. Heating of the oil baths is done by means of electric stoves *R*.

Before any test can be made, the iodine-pentoxide must be heated to 215° C. for several hours, to remove any free iodine or moisture.

This process is called "seasoning." We continue this "seasoning" until practically no iodine is liberated.

The sample of gas to be analyzed is passed into the apparatus from a 500 c.c. Thoerner gas bottle *W*, by displacement with saturated salt solution, and the apparatus is then washed with 3½ liters of air. The washing requires about 45 minutes. The liberated iodine is then titrated with N/200 sodium thiosulphate solution, using a microburette.

The apparatus was tested by running several hundred duplicate samples containing known amounts of carbon monoxide, and the following are average results of a typical series of varying concentrations:

No. of Determinations	Carbon Monoxide (in parts per 10,000) Computed	Determined	Deviation of Determined Findings from Computed parts per 10,000
7	9.75	9.67	−0.08
7	4.90	4.84	−0.06
5	1.00	0.95	−0.05
9	0.50	0.44	−0.06
7	0.20	0.15	−0.05

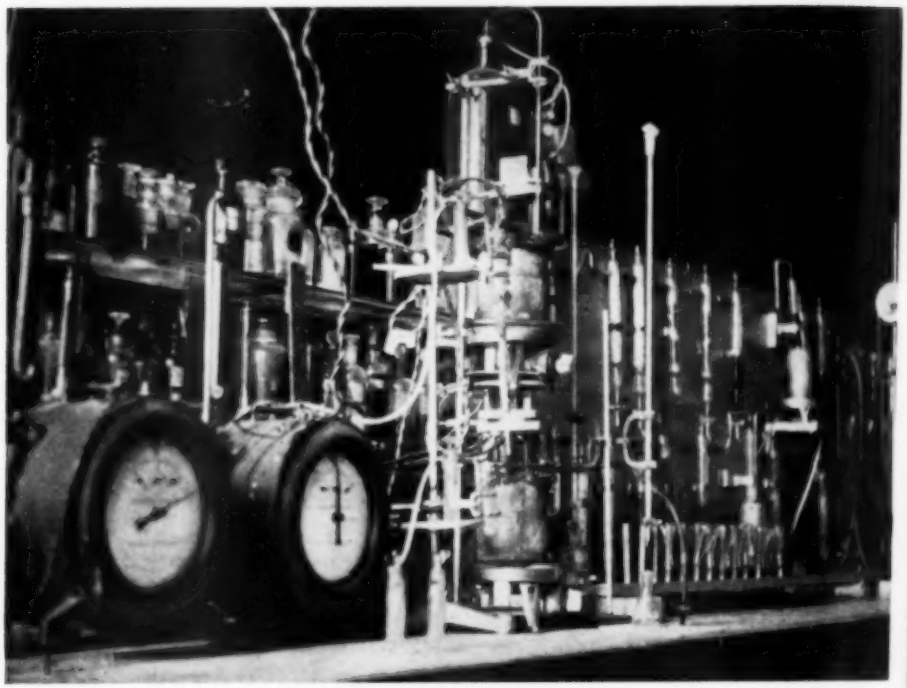
The percentage of error increased with the increase in dilution, although the average error was 0.06 parts per 10,000 for all concentrations. In the great majority of the determinations (95 per cent) the error was under 0.10 parts per 10,000, which we regard as the limit of accuracy of the method.

To determine the effect of gasoline, which is always present in automobile exhaust gases, in the determination of carbon monoxide with the apparatus, about 100 prepared samples were tested. Quantities of gasoline, ranging from 0.1 c.c. to 1 c.c., were added to the 500 c.c. sampling bottle containing the carbon monoxide, before the sample was passed through the apparatus. The following are the average results of a typical series of such analyses:

No. of Determinations	Carbon Monoxide (in parts per 10,000) Computed	Determined	Deviation of Determined from Computed parts per 10,000
3	9.58	9.69	+0.11
3	0.94	0.95	+0.01

The results showed that gasoline in concentrations generally found in exhaust gases has no material effect on the determination of carbon monoxide with the apparatus. Unsaturated hydrocarbons were also effectively absorbed, as well as hydrogen in the very small amounts usually found in exhaust gases.

The following features of the apparatus as modified by us, both in construction and operation, should be noted:



DUPLICATE SET-UP FOR ROUTINE WORK

1. All connections on the apparatus are so made that the gases at no time come in contact with rubber. The various absorption bulbs are arranged in series, and those requiring the least replacement of absorbing material contain solid reagents, while those requiring frequent replacement contain liquid reagents, the latter bulbs being emptied by means of stopcocks in the lower end. This feature obviates dismantling of the apparatus whenever it becomes necessary to renew the reagents.

2. The absorption towers and attachments are mounted on an upright board, thus occupying a minimum of space. The main portion of the apparatus can also be moved easily without disturbing the connections.

3. By the introduction of the gas meters, we were able to insure equal volume of flow through the apparatus at all times, thus avoiding any great variations in the blank determinations.

4. To avoid discrepancies in results which may occur from changes in the temperature of the oilbath heating the iodine-pentoxide tubes, a thermo-regulator connected in series with an electric light bulb was placed in the bath.

5. Our absorption towers were designed or chosen with the purpose of obtaining the maximum absorption with the least amount of head to overcome.

6. "Dehydrite" (magnesium perchlorate, trihydrate—Smith) was found superior to phosphorus pentoxide as a drying agent, as the former does not clog and cause back pressure in the apparatus.

7. The absorption tower, containing the potassium iodide solution, was so constructed that a trap was unnecessary in case of back pressure.

8. The use of a micro-burette, having a capacity of 5 c.c. and accurately calibrated to 0.01 c.c., improves the accuracy of the method. In order to make

the delivery tip sufficiently small and the delivery at the same time accurate, a platinum hypodermic needle was ground to fit the tip of the burette, and the number of drops equivalent to 1.0 c.c. was accurately determined.

After the perfection of the above mentioned apparatus, we experimented on the determination of carbon monoxide in the blood of persons exposed to small concentrations of the gas, and devised the accessory apparatus shown in Figure II for that purpose.

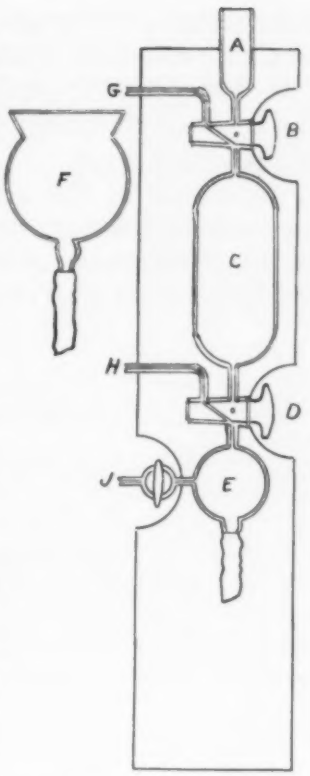


FIGURE II—ATTACHMENT FOR BLOOD ANALYSIS

The apparatus for analysis of blood is operated as follows: It is entirely filled, to stopcock *B*, with mercury by raising leveling bulb *F*, and opening stopcocks *B* and *D* straightway, keeping stopcock *J* closed. Stopcock *B* is then closed, and *F* lowered to produce a vacuum. Three c.c. of the oxalated blood under examination are pipetted into funnel *A* and are then carefully drawn into chamber *C* by slowly opening stopcock *B*. This is followed by 10 c.c. of boiled, distilled water to rinse the funnel, and then by 10 c.c. of a reagent,[7] made up of the ingredients given below.

Potassium ferricyanide	8.0 gm.
c.p. Lactic acid	4.0 c.c.
Saponin	3.0 gm.
Caprylic alcohol	3.0 c.c.
Water, Qs.	1,000.0 c.c.

This reagent liberates the gases from the blood very rapidly under reduced pressure. The apparatus is then shaken for 10 minutes by means of a motor attachment similar to that used with the Van Slyke apparatus.

Leveling bulb *F* is then lowered in order to cause all liquids in *C* to enter *E*, and stopcock *D* is then closed, care being taken that stopcock *B* is tightly closed. The liquids over the mercury are then ejected from the apparatus through *H* by turning stopcock *D* and raising *F* carefully, thus leaving *E* entirely filled with mercury. Then mercury is lowered in *E* until the level is below *J*. The connection *G* is next attached to the inlet of the modified carbon monoxide apparatus first described (Figure I), and *J* is connected to the outlet end

of the meter. The gases liberated from the blood, and held in chamber *C*, are now drawn through the apparatus by opening first stopcock *J*, then stopcock *D* straightway, and lastly stopcock *B* through *G*. The apparatus is washed out thoroughly with air, and a blank on a like volume of air is run.

By means of this apparatus we were able to determine carbon monoxide in blood concentrations as low as 0.003 c.c. of the gas per 3.0 c.c. of the blood, or a saturation of 0.5 per cent, which amount is well below the dosage producing physiological effects.

REFERENCES

1. Scott, Wilfred W. *Standard Methods of Chemical Analysis*, D. Van Nostrand Co., 1917 Edition.
2. Haldane, J. B. S. *J. Physiol.*, 22: 139, 1897.
3. Vogel's Spectroscopic Method in ***Technical*** *Methods of Chemical Analysis*, edited by George Lunge, Ph.D., Dr. Eng.
4. Sayers, R. R., Yant, W. P., and Jones, C. W. The Pyro-Tannic Acid Method for the Quantitative Determination of Carbon Monoxide in Blood and Air. Pamphlet published by permission of the Director, U. S. Bureau of Mines.
5. Teague, M. C. The Determination of Carbon Monoxide in Air Contaminated with Motor Exhaust Gas, *J. Ind. & Eng. Chem.*, 12: 10, 1920.
6. Teague, M. C. Iodine Pentoxide Method for Determining Carbon Monoxide in Low Concentrations in Air, *Report of the New York State Bridge and Tunnel Commission, 1921.*
7. Hawk and Bergeim. *Practical Physiological Chemistry*, 1927, p. 457.

NOTE: The authors wish to acknowledge the valuable assistance of Fred O. Tonney, M.D., Director of Laboratories and Research, and J. J. Aeberly, Chief of Ventilation Bureau, Chicago Department of Health, in carrying out this work.

DISCUSSION

FRED O. TONNEY, M. D.

Director of Laboratories and Research, Department of Health, Chicago, Ill.

AS civilization progresses, new material advances give rise to new health hazards, which are the consequence of changes in living conditions and environment. So it is with the unprecedented development of automobile transportation.

Health officers must be ever on the alert not only to meet the hazards of the present, but also to anticipate the hazards of the future. From the data of this paper and its companion paper read in the Engineering Section, embodying the results of a survey of street air in Chicago,[1] it becomes apparent that in the growing use of the gasoline motor we have to deal not only with a well known though perhaps minor hazard to life from carbon monoxide, but also with an ever impending and at times actual hazard to health, which is of even greater concern to us from the standpoint of numbers affected.

For this timely information on the public health dangers of carbon monoxide in street air, we are indebted primarily to the foresight of chemists who, within a few years, have taken the cruder analytical methods and refined them to an almost unbelievable degree of sensitiveness and precision. They now tell us the carbon monoxide content of air with accuracy down to less than 0.1 part per 10,000—a thing that appeared impossible a few years ago. To the engineers we are indebted for the practical application of these painstakingly evolved chemical methods.

Such problems as the aggregation of tall buildings affecting air movement, the ventilation of the lower levels of doubledecked streets, the peak of air pollution by rush hour motor traffic and, as a consequence of these, the necessity of safeguarding the health of the multitude of workers who must breathe this air hour after hour, day after day, and month after month—all these new problems, like the other older health problems, are in a fair way to be solved when they are once fully and thoughtfully recognized.

This particular problem of congested community life will be solved as others have been solved, not by regression, but by progression. It is unthinkable that, for health's sake, we may some day have to dispense with or restrict the use of so useful a tool as the gasoline automobile, for the sole reason that its combustion of fuel is incomplete and imperfect. The logical forward step toward the solution is to find ways of insuring complete combustion in the gasoline motor and to apply them as fully as possible, with the coördinated objectives of safeguarding health and conserving fuel.

The perfection of mechanical design, the use of chemical catalytic agents to accelerate combustion and the possible means to dispose of products of incomplete combustion, are some of the subjects for intensive study. I feel that we of the Laboratory and Engineering Sections are indeed fortunate in having had such an opportunity as these papers present to secure definite information on the actual conditions as they exist today and on the present and potential health hazards inherent in this modern transportation development.

REFERENCE

1. Connolly, J. I., Martinek, M. J., and Aeberly, J. J. The Carbon Monoxide Hazard in City Streets, *A. J. P. H.*, 18, 11: 1375 (Nov.), 1928.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

EDITORIAL COMMITTEE

MAZŸCK P. RAVENEL, M.D., *Chairman* HOMER N. CALVER, *Managing Editor*

C. C. YOUNG, LOUIS I. DUBLIN, PH.D., E. R. HAYHURST, M.D., MERRILL E. CHAMPION, M.D., ARTHUR P. MILLER, C.E., HENRY F. VAUGHAN, D.P.H., EVART G. ROUTZAHN, C.-E. A. WINSLOW, DR.P.H., WALTER S. FRISBIE, SOPHIE C. NELSON, R.N.

HYGIENE IN MEDICAL SCHOOLS

EVEN if it were not so freely admitted, the discussions which have gone on, and are still taking place, over medical education and the arrangement of the curriculum would prove that there is something wrong in our present methods of teaching. There are few, perhaps none, who are entirely satisfied with the present state of affairs, and there is an earnest effort to correct obvious faults. The whole matter may be summed up by saying that medicine has become such an enormous subject, while life is so urgent and so short, that it is impossible to give the ideal amount of time for proper education in the profession. New discoveries are piling up daily. The professor in whose branch a particular discovery lies must add it to the subjects taught, although his time is already insufficient for the matter in hand. Specialism is rampant, and each specialty demands its particular school, or at least a course. The difficulties are obvious. Further lengthening of the time required for the degree of Doctor of Medicine is almost out of the question. The obvious task is to apportion properly the time among the necessary and fundamental subjects.

Some schools are trying to meet the difficulty by giving fewer hours to required subjects and allowing more time for electives. While this has certain advantages, the wisdom of too great liberality is extremely doubtful. Medicine has become a business rather than a profession. Many of the high ideals of the fathers of medicine have gone down before the fire of commercialism, and the average student is not in a position to select judiciously his elective subjects. He will be swayed by the success of certain older men, including perhaps his father, or by the popularity of one or the other professor. The experience of laboratory men shows the difficulty of obtaining graduates in medicine for laboratory work. The emoluments of practice are so much greater

than can be hoped for from laboratory work that students are turning away from the latter.

In a journal like ours, we do not propose to discuss the entire medical curriculum. We are concerned in preventive medicine and hygiene. The Association of American Medical Colleges requires 54 hours as a minimum in these subjects. The average of 17 leading colleges is 47 hours. A recent schedule[1] devotes only 12 hours to hygiene and sanitation, an hour percentage of 0.4 as compared to 3 to 4 recommended by the Association of American Medical Colleges. It is explained that this small allotment of time is due to the inclusion of most of the instruction in preventive medicine in the schedule of the medical department. The same schedule drops bacteriology to 88 hours. The makers of this schedule are said to believe "that clinical medicine should be the backbone of the curriculum," therefore more than one-third of the required hours are given to that branch, which includes psychiatry, pediatrics, etc.

It has often been pointed out that public health is a profession requiring special training. Without a desire to criticise, it may be said that the average medical teacher has not had special training in bacteriology, preventive medicine, hygiene or sanitation, and is not in a position to teach these subjects to students. It is perfectly natural that the clinician should be interested in clinical medicine, with the various and rapidly multiplying methods of diagnosis and treatment. It is perfectly true that such a professor, while teaching typhoid fever —the example used in the article referred to—may tell how to disinfect the stools and urine, and may give the common sources of infection and a glimpse at the epidemiology of the disease; but it is extremely unlikely that he will treat the subject adequately, for lack of time if for no other reason, and his interests lie chiefly in the clinical side of the disease.

It is perfectly obvious that the good clinician is practicing preventive medicine, whether or not he recognizes it. With each cured case, a focus of infection is destroyed. This should never be lost sight of by those who go perhaps too much to extremes in pushing hygiene. On the other hand, one cannot imagine the average clinical professor teaching much about bacteriology, vital statistics, the physics of ventilation, lighting and heating, the purification of water supplies or the many other subjects which come properly under the head of hygiene. It is, of course, possible to develop a new type of medical teacher. The evolution is going on at present, but it is a fact that these subjects are not being generally or thoroughly taught by professors of medicine.

Anyone who reviews the papers presented before the National Board of Medical Examiners is necessarily convinced of the fact that the teaching of hygiene is extremely deficient. Students from some of our leading universities do not even know the meaning of maritime quarantine. They cannot give the insect-borne diseases met with in the United States, much less tell the difference between Aëdes aegypti and Anopheles. No one who has been a teacher will judge teachers too severely by the showing of students, but surely fundamental facts of importance should stick if properly implanted.

Instead of decreasing the number of hours given to preventive medicine and its various branches, they should be increased, and the importance of prevention should be magnified rather than subordinated to treatment and cure. Recognizing fully the wonderful advances in medicine and surgery, and the appeal which the relief of suffering and restoration to health always carry, it can still be said that prevention is more important than cure. Too long has medicine been regarded as the "healing art." It is time for a readjustment of the emphasis. The medical schools which fail to read the signs of the times will find their graduates more and more replaced by those of non-medical schools which lay stress on biology, sanitary engineering and kindred subjects.

REFERENCE

1. *South. M. J.*, Dec., 1928, p. 983.

ACCIDENTS

PREVENTIVE medicine has been concerned too exclusively with the prevention of disease, the great majority of its devotees still regarding that function as the chief, if not the only province of their profession. Some of the old dictionaries had in their definition of medicine "the remedying, as far as possible, the results of accident and violence." The speed of modern life has forced us to recognize the prevention of accidents as a part of our calling, though a casual survey of books on hygiene and preventive medicine indicates that only those interested in industrial hygiene have given the subject the attention which it deserves.

The 1928 report of the National Safety Council[1] arrests one's attention. During 1927, more than 95,000 deaths occurred by accident. If the same rate of increase holds for 1928, approximately 100,000 lives will have been lost. While the year showed a low general death rate, no improvement for accidents is evident. From 1911 to 1928, there was a total decrease in the death rate from accidents of

7.2 per cent, all of which, however, occurred prior to 1921, since which year the death rate has steadily increased. The actual number of deaths per year has increased 20 per cent. The most striking item is that deaths from automobile accidents have increased 1050 per cent during the same period. It is pleasing to note the great improvement in deaths from railway and street railway accidents—37 per cent in one case, and 44 per cent in the other. As might be expected, a large number of automobile accidents occur among children, most of them in the 5–9 year period. This rate is exceeded only in the longer 15–24 year period, by approximately 3 per cent. Defects in the vehicle, such as poor brakes, improper lighting, etc., played a comparatively small part in the total number of accidents, there being only 4,969 cases reported in approximately 200,000 vehicles. Intoxication and physical defects were reported in 3,163 cases, 90 per cent of these being the result of intoxication. As far as the responsibility of the driver of the car goes, the greatest number of accidents occurred through violation of the rules of right of way. Excessive speed, driving on the wrong side of the road, failing to signal and cutting in, come next in order as given. As far as pedestrians injured are concerned, crossing at intersections without a signal was the chief cause of accidents, crossing between intersections coming next, and playing in the street third.

A more recent report from the City of New York,[2] while not so detailed in character, shows that highway accidents lead as the cause of violent deaths—1,306 out of 5,902.

The figures taken from these two reports have been selected because, for the most part, they represent the more easily preventable causes of accidents. The railroads and street car lines have adopted very widely the "Safety First" slogan. It is recognized that the great increase in automobile traffic has had a marked influence in decreasing the number of passengers on railways and street cars, especially for the short hauls, but there is little doubt that care of equipment and instructions to operatives have also played a part. It seems time for those interested in hygiene and public health to take a more active part in the education of the public in the prevention of accidents, and for the influence of the vast body of health workers to be exercised, not only for the making of laws, but for the provision of officers to enforce such laws.

REFERENCES

1. *Public Safety Series, No. 17*, 108 East Ohio Street, Chicago, Ill.
2. *Weekly Bull.*, Dec. 1, 1928.

NOISE

WE live in a world which is noisy and daily becoming noisier. Mechanical inventions of every kind are replacing hand labor, and most of them produce noises of varying degrees of intensity. Even the air is now inhabited by planes. The speed of the times requires work both at night and on Sundays.

With the exception of hospitals and schools and the so-called quiet zones, the average person has probably accepted these new noises as inevitable. During the past two years the matter of noise has gotten into the medical journals of several countries. The physician interested in the treatment of insane or neurotic individuals is perhaps more concerned than the average doctor, though the good effects of rest and sleep are well recognized in the treatment of all diseases.

In England the matter has recently been brought to a focus by a memorandum submitted to the Minister of Health by the British Medical Association.[1] While it is particularly desirable that the usual hours of sleep—say from 10 p.m. to 6 a.m.—should be kept quiet, it is obvious that many persons work at night and rest during the day. Healthy persons seem capable of adapting themselves to noises, though this costs something in the amount of energy which must necessarily be expended in inhibiting the undesirable stimuli. Where a noise is rhythmic and uniform in quality, pitch and intensity, the average person apparently bears it with little injury, but noises which are irregular in any of these qualities do serious injury.

No argument is needed to emphasize the importance of rest and quiet sleep. Health can be maintained only when these can be obtained. Those who are sick need all their strength for recovery. Neither the sick nor the well can afford to have their necessary rest disturbed, especially where the noises are of such an unnecessary and aggravating character as to produce emotions of reaction such as anger and irritation. In approximately 75 per cent of cases of mental breakdown, loss of sleep is either a symptom, or causes an aggravation of the basic difficulty, and, on the other hand, production of sleep is recognized as a means of prevention and even cure.[2]

Among the disturbing factors which stand out prominently are the horns of automobiles, motorcycles, exhausts without mufflers, trucks without pneumatic tires—especially those handling milk cans—engines blowing off steam, cars with flat wheels, and in towns, street cars with flat wheels and loose trucks. Conditions differ according to the locality, but everyone will recognize some of these noises wherever he may be.

Those who are "nervous" are doubtless prone to exaggerate the

intensity and the bad effects of noises, but there are probably few people, even in the smaller towns or along the highways of the country, who will not admit the unnecessary disturbances both during the hours normally allotted to rest and those devoted to labor.

The Minister of Health, who is a layman, gave a sympathetic hearing to the joint deputation from the British Medical Association and the People's League of Health, pointing out, however, that some definition of what constituted noise must be agreed upon, and suggesting further that studies should be made in factories, such as are already being carried out by the Industrial Fatigue Research Board. People certainly vary tremendously in their reaction to stimuli of various sorts. One must remember the reply of the artillery officer at a concert who was asked if he was fond of music. His reply was, "Yes, I like noise of any kind."

REFERENCES

1. *Brit. M. J.*, Supplement, Nov. 10, 1928, p. 1267.
2. *Brit. M. J.*, Dec. 8, 1928, p. 1053.

ASSOCIATION NEWS

HEALTH SURVEY OF HONOLULU

The Committee on Administrative Practice of the A. P. H. A. has been asked to make a survey of public health activities in the City and County of Honolulu. This study, which is being sponsored by the United Welfare Fund of Honolulu, has the endorsement of the U. S. Public Health Service, the local board of health, the medical profession, hospitals of the city, the local chamber of commerce, and the most important voluntary agencies engaged in public health and welfare work. A special survey committee with wide representation has been appointed and is already actively engaged in gathering information and data which will be of assistance to the surveyor. Prof. Ira V. Hiscock will carry on the field work for the Committee on Administrative Practice, and will leave for Honolulu the latter part of May. Prof. Hiscock will have the benefit of consultant service from experts on certain phases of health work which are included in the survey.

DEATH OF MR. ROSSITER

William Sydney Rossiter, for many years President of the Rumford Press, Concord, N. H., died January 23, at his home, after an illness of a few days' duration.

Mr. Rossiter published the JOURNAL for several years and took an interest in its development even after it had been transferred to another publishing house. He was an ex-president of the American Statistical Association.

MAURICE M. SEYMOUR DIES

The Association announces with regret the death of Maurice McDonald Seymour, M.D.C.M., D.P.H., LL.D., formerly Deputy Minister of Health of the Province of Saskatchewan and a vice-president of the American Public Health Association. Dr. Seymour was president of the Conference of State and Provincial Health Authorities of North America in 1926 and was active in public health work in Canada for more than 20 years.

The following item has been prepared for the readers of the JOURNAL by F. C. Middleton, M.D., Acting Deputy Minister of Health of Saskatchewan:

Dr. Seymour was automatically superannuated in November, 1927, in accordance with the provisions of the Superannuation Act of Saskatchewan. However, the Government requested him to remain as Advisor to the Government on Public Health matters, there being just at that time several matters of importance to be dealt with by the department, one of which was a request made by the United Farmers' Organization of the Province that a travelling diagnostic clinic be established under the auspices of the department. It was then also that the time was considered ripe for introducing the full-time health district system into Saskatchewan, and Dr. Seymour had been promoting this scheme for the past few months previous to his death. His death, which was due to acute indigestion and chronic myocarditis, was very sudden, as he was sick only twenty-four hours. He had been in the office on Tuesday and passed away on Thursday morning, January 17. Dr. Seymour was an ardent worker and the fruits of his labors will be long felt not only in this province but throughout the Dominion and North America.

MICHIGAN PUBLIC HEALTH WORKERS MEET FOR EIGHTH YEAR

The Eighth Annual Public Health Conference of Michigan was held at Lansing, Mich., January 9–11, under direction of the Michigan State Department of Health and the Michigan Public Health Association with a registration of 286.

The following officers were elected:

President, Carl E. Buck, Dr.P.H.; *Vice-President,* Annette M. Fox, R.N.; *Secretary-Treasurer,* W. J. V. Deacon, M.D.; *Board of Directors,* Prof. John Sundwall, Don M. Griswold, M.D., Theodore Werle, W. D. Henderson, M.D., Louis Dorpat, M.D., and Mrs. J. K. Pettengill.

Guy L. Kiefer, M.D., was elected representative on the Governing Council of the A. P. H. A.

James W. Wallace, M.D., Associate Field Director for the Committee on Administrative Practice, A. P. H. A., represented the Association and addressed the conference.

SOUTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION OFFICERS

At the annual meeting of the Southern California Public Health Association held January 30, in Los Angeles, Calif., the following officers were elected for the year: *President,* Warren F. Fox, M.D., Health Officer, Pasadena; *First Vice-President,* W. B. Wells, M.D., Health Officer, Riverside County; *Second Vice-President,* A. M. Lesem, M.D., Health Officer, San Diego; *Secretary-Treasurer,* C. W. Arthur, City Bacteriologist, Pasadena; *Executive Committee,* Warren F. Fox, M.D., Health Officer, Pasadena; J. L. Pomeroy, M.D., County Health Officer, Los Angeles; C. W. Arthur, City Bacteriologist, Pasadena; Sven Lokrantz, M.D., Medical Director, Los Angeles City Schools, Los Angeles; H. A. Young, Chief Sanitary Inspector, County Health Department, Los Angeles; L. Simpson, R.N., Director of Nurses, County Health Department, Los Angeles; W. T. Knowlton, Sanitary Engineer, Los Angeles; G. E. McDonald, M.D., Health Officer, Long Beach; K. H. Sutherland, M.D., Health Officer, Orange County.

REPORT OF THE COMMITTEE ON THE STATUS OF MATERNAL AND INFANT MORTALITY

Anyone wishing to obtain the report of the Committee on the Status of Maternal and Infant Mortality of the Child Hygiene Section of the American Public Health Association may borrow the original report from the Association. The complete report has not been published in any of the journals because of the large amount of statistical material contained therein.

DEATH OF DR. WILLIAM H. DAVIS

William H. Davis, M.D., Chief Statistician for Vital Statistics in the Bureau of the Census, who died on January 8, was an outstanding figure in the field of vital statistics. He was a graduate of Harvard University and of the Harvard Medical School. After studying in Europe, he decided to devote himself to vital statistics work, and became, in 1908, Deputy Health Commissioner and Vital Statistician of the City of Boston. In 1916, he was appointed to the position in the Bureau of the Census left vacant by Cressy L. Wilbur, M.D. He filled this position according to the best traditions left by his predecessors, Dr. Wilbur and William A. King, both truly great men. Due to Dr. Davis's work in the Bureau and his active connection with the world-wide movement for better vital statistics, he became one of the foremost authorities in his chosen profession.

In the Bureau of the Census, his energy was largely directed toward the completion of the registration areas for births and deaths; and second only to their sorrow at the loss of the man himself is the regret of his professional associates that Dr. Davis did not live to see the day (near at hand) when success will crown his long campaign for country-wide registration of these vital data. He enlisted in this campaign the active assistance of the American Public Health Association, which appointed its

Committee to Aid Completion of the Registration Area.

He was actively interested in the scientific classification of diseases for purposes of mortality and morbidity statistics. In this he was a recognized authority throughout the world. He was an active member of the Committee on Accuracy of Certified Causes of Death (Vital Statistics Section of the A. P. H. A.). This committee, largely through Dr. Davis's efforts, was instrumental in bringing about important improvements in the International List of Causes of Death. In 1920, he was one of the United States delegates to, and Vice Chairman of the International Conference, at Paris, for the revision of this classification. In 1927, he again went to Europe to consult with foreign nosologists concerning problems to be considered by the next International Conference on revision of the classification. In 1925, on invitation of the League of Nations, he joined a tour of medical statisticians, with the object of bringing about closer agreement in international statistical practice.

Dr. Davis was a prominent figure in the A. P. H. A. He was a Vice President in 1923, Chairman of the Vital Statistics Section in 1919–1920, and, year after year, served as chairman of important committees.

One outstanding contribution was the Bureau of the Census *Manual of Joint Causes of Death*, published in 1925. This gives the best method of disposing of one of the most troublesome phases of codifying causes of death. Dr. Davis deserves special credit, also, for his improvements in the Standard Certificates of Births and Deaths.

While with the Boston Health Department, he wrote two valuable pamphlets: *The Relation of the Foreign Population to the Mortality Rates for Boston* and *The Statistical Comparison of the Mortality of Breast-Fed and Bottle-Fed Infants*.

The Bureau of the Census mortality reports were improved in several respects while Dr. Davis was Chief Statistician. Especially noteworthy were his tables showing contributory as well as primary causes of death. During his administration, much valuable information was made public when it was of *current* interest. This was appreciated by public health workers and the press, which used Dr. Davis's announcements in news dispatches and editorials.

Personally, he was a modest, kind-hearted gentleman. The whole-hearted sympathy of all who knew him goes out to his widow and children. He was liked and respected by his colleagues, who recognized his zeal for his chosen profession and his fine, companionable personality.

NEW MEMBERS

James M. Adams, M.D., Baton Rouge, La., Refinery Physician, Standard Oil Company of Louisiana

William S. Applegate, Neptune, N. J., Health Officer and Deputy Registrar Vital Statistics

Roy T. Barker, New York, N. Y., Director of Health and Safety, Western Electric Company (Assoc.)

M. F. Barnes, V.M.D., Harrisburg, Pa., Director of Laboratory, Bureau of Animal Industry

James M. Beeler, M.D., Spartanburg, S. C., County Health Officer

Marjorie T. Bellows, B.A., Albany, N. Y., Statistician, Division of Vital Statistics, State Department of Health

B. D. Blackwelder, M.D., Natchez, Miss., Director Adams County Health Department

Sidney W. Bohls, M.D., Austin, Tex., Director of Laboratory, State Health Department

Beatrice Hall, B.S., Cambridge, Mass., Student in Biology and Public Health, Massachusetts Institute of Technology

Charles F. Hayes, M.D., Fort Worth, Tex., Director of Health, Public Schools

Clyde C. Hays, Waco, Tex., Chemist and Bacteriologist, Health Department

Lee S. Huizenga, M.D., C.P.H., Grand Rapids,

Mich., Student, Department of Public Health, Yale Graduate School (Assoc.)

Mattie C. Jackson, R.N., Port Arthur, Tex., School Nurse

Lawrence H. James, Ph.D., Washington, D. C., Food Bacteriologist, U. S. Department of Agriculture

Adam G. Kading, Long Beach, Calif., Chairman, Grand Jury Public Health Committee, Los Angeles County (Assoc.)

Nadina R. Kavinoky, M.D., Pasadena, Calif., Lecturer at Mothers' Conferences, Los Angeles County Health Department

P. Martin Keller, M.D., Glendale, Calif., Deputy Health Officer, Los Angeles County Health Department

O. J. Muegge, B.S., Madison, Wis., Assistant Sanitary Engineer, State Board of Health

Timothy F. Murphy, M.D., Washington, D. C., Chief, Division of Vital Statistics, Bureau of the Census

E. H. Parfitt, M.S., LaFayette, Ind., Milk Inspector, Dairy Department, Purdue University

Stanley J. Peltier, M.S., Mt. Clemons, Mich., Research Bacteriologist

Robert A. Phair, B.S., Allendale, N. J., Vice-President, Board of Health

Russell I. Prentiss, Lexington, Mass., Milk and Health Inspector

Myrtle F. Roberson, R.N., Greensboro, N. C., Supervising Nurse, Greensboro Nursing Council

Edward S. Rogers, Trenton, N. J., Sanitary Inspector

Robert D. Roller, Jr., M.D., Charleston, W. Va., Chief Medical Inspector, Public Schools

Paul L. Skoog, Inglewood, Calif., Los Angeles County Health Department

Robert R. Spears, A.B., Altoona, Pa., Bacteriologist, Pennsylvania Railroad Laboratory

Ellen S. Stadtmuller, M.D., San Francisco, Calif., Chief, Bureau of Child Hygiene, State Department of Public Health

Margaret H. Tracy, A.B., Sante Fe, N. M., Field Representative, Committee for the Completion of the Registration Area by 1930, American Public Health Association

Leon Wasserman, Ph.G., Philadelphia, Pa., Assistant Bacteriologist, Bureau of Water, Belmont Laboratories

Myron Weiss, A.B., New York, N. Y., Associate Editor, *Time* (Assoc.)

Harry von Loesecke, S.B., Arlington, Mass., Research Chemist, United Fruit Co., Boston, Mass.

DECEASED MEMBERS

George T. Johnson, M.D., Terre Haute, Ind. Elected member 1926

Harry Rand, M.D., Chicago, Ill. Elected member 1923

A. M. Burt, M.D., Ballston Lake, N. Y. Elected member 1926

Horatio Z. Silver, M.D., Eaton, O. Elected member 1926

Isaac W. Brewer, M.D., Bath, N. Y. Elected member 1915—Fellow 1922

Thomas P. Walsh, M.D., Middletown, Conn. Elected member 1915

Edward A. Woods, Pittsburgh, Pa. Elected member 1927

Dr. R. G. Burns, Pittsburgh, Pa. Elected member 1915—Fellow 1922

Nannie L. Winn, M.D., Nashville, Tenn. Elected member 1927

Richard A. Gantz, Muncie, Ind. Elected member 1926

Carl Speer, Jr., M.S., Baltimore, Md. Elected member 1926

Marinus L. Holm, M.D., Lansing, Mich. Elected member 1914

C. G. McLaughlin, M.D., Dunkirk, O. Elected member 1927

George A. Dickinson, Port Hope, Ont. Elected member 1919

Edward G. Folsom, Mt. Clemons, Mich. Elected member 1928

E. C. Schroeder, M.D., Bethesda, Md. Elected member 1920

Joseph Goldberger, M.D., Washington, D. C. Elected member 1909—Fellow 1922

William H. Davis, M.D., Washington, D. C. Elected member 1919—Fellow 1923

EDITOR'S APOLOGY

Proof of the discussions on pp. 28–30 of the January, 1929, JOURNAL, following the article, "Mobilizing Mutual Benefit Associations for Health," was not submitted to the discussants before publication.

The statements were printed verbatim from the notes.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Conference on Influenza, January 10, 1929—The following is a report of one of the three committees of the Conference.*

REPORT OF COMMITTEE ON EPIDEMIOLOGY

The features which have distinguished influenza in its typical pandemic outbreaks, such as those of 1918 and 1889–90, are:

1. A great increase in the prevalence of illness of which the usual symptoms are: fever, of more or less sudden onset, of moderately high range and of only a few days' duration; aching of the body and limbs; inflammation of the upper respiratory passages, and marked prostration. In its manner of spread this disease has the characteristics of a highly contagious infection, transmitted directly from person to person.

2. Coincident increase in the prevalence of pneumonia, developing apparently as a complication of a certain proportion of the influenza cases.

3. A rise in the general mortality rate, due largely to increase in deaths certified as influenza or pneumonia. These deaths characteristically show an age distribution different from that of normal times, in that the proportion of young adults is increased.

4. In any given locality, the epidemic develops and runs its course rapidly, so that its duration, even in a large city, is a matter of not more than 5 to 10 weeks.

5. The tendency is to rapid and wide extension, different communities being attacked in such quick succession that the spread across a continent requires only a few weeks, and where the disease becomes pandemic it travels around the world within 3 to 6 months.

The epidemics which show the full development of all these features, including world-wide prevalence, are rather rare events, recurring at intervals which usually have exceeded 20 years. However, at much more frequent intervals we have minor epidemics, similar in general character, but differing from the typical picture in some respects, notably in lower prevalence, less severe clinical type, slighter effect on mortality, and less extensive area of spread. The exact relationship which these bear to true pandemic influenza is still a matter for investigation rather than fixed opinion; but the more distinct of the minor epidemics are generally accepted as true influenza of modified virulence and intensity. Since 1919 at least two such outbreaks have occurred in the United States, one in 1920 and one in 1926, with some more doubtful epidemics in other years.

The data available at this time for judging the nature, extent and severity of the present epidemic are: clinical accounts of the cases seen in communities already attacked; official morbidity reports, which are admittedly incomplete and uneven, but have nevertheless a certain significance; and, for the large cities listed in the *Weekly Health Index*, weekly reports of deaths from all causes, and from influenza and pneumonia.

All this evidence agrees in indicating the existence of a definite epidemic of influenza. It seems to have developed first in the vicinity of San Francisco, early in November. Since that time it has extended, with characteristic rapidity and in fairly regular sequence, until it has now become demonstrable in all sections of the United States except the northeastern states.

The epidemic is already on the decline in those western cities which were first affected; and has apparently reached its peak in some middle western cities, but in the east seems not yet to have reached

* Report of the Committee on Preventive Measures appeared in the JOURNAL for February, 1929, p. 205.

its full development. The effect on mortality has not approximated that caused by the pandemic of 1918, and has been less than in the epidemic of 1920, but more severe than at any time since the latter date.

For the statistical and epidemiological study of the epidemic we recommend:

1. That the U. S. Public Health Service continue and extend its activity in the collection and compilation of morbidity and mortality statistics, to afford both a current and a permanent record of the epidemic.

2. That the U. S. Public Health Service undertake special surveys of morbidity in a sufficient number of localities to give a more exact picture of the prevalence and epidemiology of the disease.

3. That state and local health authorities, the military services, and institutions, in addition to collecting their usual records, undertake such statistical and field studies as circumstances will permit, and that they be especially on the alert to take advantage of any opportunities which may be presented for unusually instructive epidemiological observations.

4. We would also call attention to the need for extensive and careful clinical studies, particularly such as will give accurate descriptions of unselected cases, including the milder types of doubtful diagnosis.

In addition to the general subject, two specific questions have been referred to this committee.

First: Is it desirable that influenza be included in the list of notifiable diseases? We believe that it should be so included, at least to the extent of simple numerical statements.

Second: Should an official clinical definition of influenza be adopted by this Conference for the guidance of physicians in differentiating influenza from other respiratory disorders to the end that morbidity reports should be more uniformly comparable? We believe that this is not advisable.

WILLIAM H. WELCH
WILLIAM H. HOWELL
MATTHIAS NICOLL, JR.
W. G. SMILLIE
EDGAR SYDENSTRICKER
W. F. DRAPER
THOMAS F. PARRAN
W. H. FROST

Immunization in Scarlet Fever—A group of 9,780 school children of known skin test were selected for observation for a period of 3 years. During this time 182 contracted scarlet fever. In accordance with the result of the skin test the children have been divided into five groups. There were 3,424 who gave a negative skin test, of whom 16 developed scarlet fever, giving an incidence rate of 4.7 per 1,000. There were 2,289 in the group with (±) skin test (diameter of reddened area 0.5–1.0 cm.), and of these, 21 contracted scarlet fever, giving an incidence rate of 9.2 per 1,000. In the group with (+) skin test (1.0–1.5 cm.) there were 2,099 children, of whom 48 contracted scarlet fever, giving an incidence rate of 22.9 per 1,000. There were 1,528 children with a (++) skin test (1.5–2.5 cm.). In this group 73 contracted scarlet fever, giving an incidence rate of 47.5 per 1,000. There were 440 in the group with a (+++) skin test (2.5 cm. and larger). Among this group 24 cases of scarlet fever developed, giving an incidence rate of 54.5 per 1,000. These figures show that the more intensively positive the test, the higher is the incidence rate of scarlet fever. If contracted by negative and slightly positive reactors, the disease is generally mild, especially so far as the rash is concerned.

Among 1,825 children completely immunized against scarlet fever with a dosage of from 30,000 to 50,000 skin test doses, 1 case of scarlet fever developed, giving an incidence rate of 0.6. Among 636 incompletely immunized, 11 cases developed, with an incidence rate of 17.3. Among 832 known immunized children 40 cases developed, with an incidence rate of 48.1.—George Moriwaki, Correlation between the Skin Test and Active Immunization in Scarlet Fever, *J. Prev. Med.*, 3: 13 (Jan.), 1929.

LABORATORY

C. C. YOUNG

A NEW MICRO SLIDE HOLDER

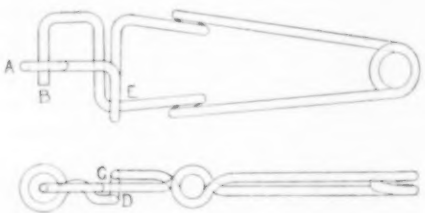
PHILIP L. VARNEY

Washington University, St. Louis, Mo.

OF THE numerous slide holders obtainable for use in staining procedures, none are constructed to grip the slide in a manner to prevent effectually the overflow and spilling of the stain, due to capillarity, when the slide is flooded, as in acid-fast staining. The slide holder described here was designed to prevent such repeatedly experienced accidents. The slide may be held very rigidly by the use of such a device.

Figures I and II illustrate the construction of the slide holder, which should be made of phosphor-bronze wire 2.5 mm. in diameter. The most convenient length for ordinary staining purposes is 15 cm., and the width at the widest point 3.5 cm. It is so constructed that by compressing the handle of the holder the tip (B) is forced upward, leaving a gap between it and the platform or ring (A), in which the slide is placed. When the pressure on the handle is removed, the slide is gripped and held firmly.

Side movement of the tip (B) is prevented by means of the guards (C) and (D), between which the wire (E) slides. These guard wires must be of such a length that with the micro slide in place (E) will still be between the guards, thus effectually preventing any trace of sideward movement and the consequent dropping of the slide.



FIGURES I AND II

The micro slide may be held with any desired tension, by removing (E) from between its guard wires and bending the spring backward or forward in the desired direction, thus increasing or decreasing the tension. Any size slide may be held without danger of its turning or of the stain overflowing even when the slide is flooded to the extreme edge.

CASES OF DYSENTERY IN NEW YORK STATE ATTRIBUTED TO B. DYSENTERIAE SONNE

RUTH GILBERT, M. D., AND M. B. COLEMAN

Division of Laboratories and Research, New York State Department of Health, Albany, N. Y.

CASES of dysentery attributed to the lactose fermenting bacillus described by Sonne[1] have seldom been reported in this country, although dysentery due to infection with this organism has been recognized in Australia,

Europe, England, and Scotland, where a milk-borne epidemic occurred in 1926.[2] The symptoms described have usually been less severe than those following a *B. dysenteriae* Flexner infection, but recently two fatal cases[3, 4] have been reported in England.

B. dysenteriae Sonne corresponds to the Flexner and Mt. Desert types in morphology and in the reaction produced in triple-sugar agar. The biochemical characteristics, however, show certain marked differences. Lactose is fermented slowly; the formation of appreciable amounts of acid in medium containing this carbohydrate may be delayed 10 days or longer in the case of some freshly isolated strains. Mannitol is fermented; maltose and saccharose may or may not be, and when they are, the reaction is slow. Acid is produced slowly in milk. Indol is not formed. In polyvalent dysentery immune serum prepared with the nonlactose fermenting strains, cultures of the Sonne dysentery bacillus are usually agglutinated only in low dilutions. Even in homologous serums they may be inagglutinable when freshly isolated, but, after being transferred daily for from 1 to 2 weeks, a specific reaction is obtained. Agglutination of the culture in patients' serums is believed by Sonne and others to be of definite significance.

Within a few months, 12 strains of this organism, 8 of which were isolated either in the branch laboratory or in county laboratories, have been identified. All were obtained from fecal specimens from patients reported to have more or less severe symptoms of dysentery, bloody stools being noted in 4 cases. No deaths have as yet been reported. Unusually dilute suspensions of the cultures absorb the agglutinative properties of a serum prepared with a strain of *B. dysenteriae* Sonne obtained from the American Type-Culture Collection.

In only 1 instance were any other organisms of diagnostic significance found. *B. typhosus* was isolated from a specimen of feces received from one patient 2 days before the specimen was received in which *B. dysenteriae* Sonne was found. The clinical manifestations were typical of typhoid fever. It seems probable either that this was a double infection or that the patient was a carrier of the dysentery bacillus, since other patients in the same hospital were suffering from dysentery and *B. dysenteriae* Sonne was isolated from their stools.

Four of the 12 cases described occurred in two state hospitals, and 5 in a city during an epidemic of enteric disease attributed to a polluted water supply. The remaining 3 were in widely separated counties. This distribution indicates that infection with *B. dysenteriae* Sonne may be more prevalent than has previously been supposed.

REFERENCES

1. Sonne, C. Ueber die Bakteriologie der giftarmen Dysenteriebacillen (Paradysenteriebacillen). *Centralbl. f. Bakteriol., Orig.*, 75: 408, 1915. Die diagnostische Bedeutung der Agglutination der giftarmen Dysenteriebacillen (Paradysenteriebacillen) in Patientenseris. *Centralbl. f. Bakteriol., Orig.*, 76: 65, 1915.

2. Fyfe, G. M. Milk-borne Sonne dysentery. *J. Hyg.*, 26: 271, 1927.

3. Evans, W. H. Fulminating dysentery in a child, caused by *B. dysenteriae* Sonne. *Brit. M. J.*, 2: 96, 1928.

4. Clayton, F. H. A., and Hunter, J. W. Infection with *B. dysenteriae* Sonne. *Lancet*, 215: 649, 1928.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Principal Causes of Death in 1927—The Department of Commerce announced that 1,236,949 deaths occurred in 1927 within the death registration area of continental United States, representing a death rate of 11.4 per 1,000 population, the lowest since 1900. The principal decreases in death rates were for pneumonia (all forms) from 102.5 per 100,000 population in 1926 to 80.5 in 1927, for influenza from 40.7 to 22.6, tuberculosis (all forms) from 87.1 to 80.8, diarrhea and enteritis (under 2 years) from 27.0 to 21.6, nephritis from 98.3 to 92.5, measles from 8.2 to 4.1, and diseases of the heart from 199.1 to 195.7. An increase is shown in the death rates from automobile accidents from 17.9 per 100,000 population in 1926 to 19.5 in 1927. Other causes of death that showed increased death rates for 1927 were diphtheria, malaria, cancer and other malignant tumors, and suicides.—U. S. Dept. of Commerce, *Press Release*, Dec. 21, 1928.

Preliminary Report on Marriage and Divorce for the United States, 1927—There were 1,200,694 marriages performed in the United States during the year 1927 as compared with 1,202,574 in 1926. These figures represent a decrease of 1,880 marriages, or about 0.2 per cent. The number of marriages per 1,000 population was 10.12 in 1927 as against 10.27 in 1926. During 1927 there were 192,037 divorces granted, as compared with 180,853 in 1926. This is an increase of 11,184, or 6.2 per cent. There were 4,252 marriages annulled in 1927, as compared with 3,825 in 1926. While the net decrease in the number of marriages performed in the country as a whole was 0.2 per cent, the relative change in the different states ranged from a decrease of 25.4 per cent in Florida to an increase of 95.3 per cent in Nevada. The number of marriages per 1,000 population in 1927 ranged from 4.7 in Delaware and 5.8 in Wisconsin to 31.0 in Nevada and 16.6 in Mississippi. These figures may be compared with those of 1926, being 4.6 per 1,000 population for Delaware, 5.8 for Wisconsin, 15.9 for Nevada and 16.0 for Mississippi. The number of divorces showed a range of increase from 1.1 per cent in Oregon to 52.1 per cent in the District of Columbia and 91.3 per cent in Nevada. The decreases in divorces ranged from 35.3 per cent in Vermont to 1.9 in Missouri. The figures for Vermont and Nevada are due to changes in the divorce laws, effective in 1927. The number of divorces per 1,000 population was 25.2 for Nevada in 1927 as compared with 13.2 in 1926. In the District of Columbia there were 0.27 divorces per 1,000 population as compared with 0.18 in 1926.—U. S. Department of Commerce, *Press Summary*, Dec. 17, 1928.

Mortality Figures of the Willard Parker Hospital—In 1922, 4,409 cases were treated at Willard Parker Hospital. These resulted in 737 deaths, a mortality of 16.7 per cent. In 1924 the general mortality for 3,320 cases was 10.9 per cent; and in 1927 for 3,323 cases, it was 7.3 per cent. Between 1922 and 1927 the general mortality was reduced 56.3 per cent. Between the years 1922 and 1927, the diphtheria mortality at Willard Parker Hospital

fell from 18.1 to 9.0 per cent, a reduction of 50.3 per cent. Improvement in the treatment of laryngeal diphtheria "croups" by suction was responsible in a large measure for the reduction of the diphtheria death rate. In 1922, 14.2 per cent of the cases treated were intubated, and 53.8 per cent of these died. In 1927, 4.5 per cent of the cases treated in the hospital were intubated, and 16.7 per cent died. There were 1,158 cases of measles in 1922, and 22.5 per cent of these died. In 1925, a non-epidemic year, 6.2 per cent of 660 cases died, and in 1927, 9.1 per cent of 220 cases died. During 1922 there were 895 cases of scarlet fever treated which had a mortality of 8.4 per cent, as against 936 cases treated in 1927 which had a mortality of 2.4 per cent. The reduction of the scarlet fever mortality was largely influenced by the use of serum in the treatment of severe cases. —Shirley W. Wynne, *New York State J. Med.*, 29: 12–13 (Jan. 1), 1929.

The **Health of Gibraltar**—During 1927 the corrected death rate of Gibraltar was 20.3 per 1,000 population, while the crude rate was 17.3. The birth rate was 22.5 per 1,000, and the infant mortality rate was 99 deaths per 1,000 live births. There were 16 deaths from cancer, 1 from diphtheria, 9 from influenza, 27 from pneumonia and 30 from tuberculosis. The death rate from pulmonary tuberculosis was high, being 1.3 per 1,000 population.—*Med. Off.*, 40: 223 (Nov. 24), 1928.

VITAL STATISTICS FOR 1928

New York, N. Y.—The Health Department of New York reported that there were 77,677 deaths from all causes during 1928. This gives a death rate of 12.9 per 1,000 population, as compared with 12.2, the average rate for the previous 5 years. The total number of births during 1928 was 126,332, a decrease of 2,556 from 1927, and 3,758 from 1926. Deaths among infants totalled 8,279, giving a rate of 66 infant deaths per 1,000 births. During the year there were 641 deaths from diphtheria, 17,079 from heart disease, 4,611 from pulmonary tuberculosis, 9,951 from pneumonia, 891 from influenza, 7,677 from cancer, and 514 deaths from meningitis.—*New York Times*, Jan. 2, 1929; *New York Sun*, Jan. 2, 1929.

Newark, N. J.—Newark's birth rate for 1928 is the lowest on record in the city. There were 9,886 births during the year, giving the low rate of 20.9 births per 1,000 population. The estimated number of deaths under 1 year of age is 620 for the year, giving an infant mortality rate of 63 per 1,000 births. The estimated number of deaths for the year was 5,670, giving a general mortality rate of 11.5 per 1,000 population. This is a slight rise over 1927 when the rate was 10.9 per 1,000. Typhoid fever showed the greatest reduction of deaths, with the low death rate of 1.05 per 100,000 population. The nearest approach to this record was in 1925 when the rate was 1.1 per 100,000. Scarlet fever had a death rate of 1.5 as compared with 2.6 for 1927; whooping cough had a rate of 4.4 for 1928, and 6.6 in 1927; heart disease had a rate of 208.9 in 1928, and 217.9 for 1927. The greatest increase was shown by measles, with a mortality rate of 10.1 per 100,000 for the year as compared with a rate of 0.7 in 1927. Another marked increase was shown by pneumonia with a mortality rate of 129.7 as compared with 103.8 for 1927.—*Newark News*, Dec. 29, 1928.

Hoboken, N. J.—According to the registrar of vital statistics there were 1,159 births in Hoboken for 1928, as compared with 1,225 for 1927. The birth rate in 1928 was 16.6 per 1,000 population as compared with 17.9 for 1927. There were 645 deaths from all causes in 1928, giving a death rate of 9.2 per 1,000 population, as compared

with 651 deaths with a death rate of 9.3 in 1927. In both 1928 and 1927 the greatest number of deaths occurred between the ages of 50 and 60 years. There were 116 deaths from pneumonia in 1928, as against 101 in 1927. Thirty-five deaths were caused by tuberculosis in 1928, as compared with 37 in 1927. There were 35 deaths from cancer in 1928 as against 45 for the preceding year.—*Jersey Observer*, Jersey City, N. J., Jan. 16, 1929.

Milwaukee, Wis.—The 1928 death rate for Milwaukee was 10.7 per 1,000 population. The infant mortality rate was 68 deaths per 1,000 live births. There were 1,710 cases and 10 deaths from scarlet fever, as compared with 1,362 cases and 7 deaths in 1927. Whooping cough had 1,943 cases and 24 deaths compared with 1,114 cases and 16 deaths the previous year. Influenza showed a marked increase, with 77 deaths compared with 21 in 1927, and pneumonia showed 532 deaths, compared with 491 in 1927. Typhoid fever with 16 cases and 4 deaths showed the lowest typhoid record in the history of the city. Diphtheria showed an improvement, with 349 cases and 30 deaths, compared with 694 cases and 49 deaths in 1927. Tuberculosis showed a decrease for 1928 with 263 deaths compared with 292 in 1927.—*Milwaukee Journal*, Dec. 31, 1928.

San Francisco, Calif.—Up to December 26 there were 7,928 births in San Francisco for the year 1928. During 1927 there were 8,344 births. The number of deaths from all causes has increased from 7,826 in 1927 to 8,151 up to December 26, 1928.—*San Francisco Bulletin*, Dec. 31, 1928.

Omaha, Neb.—There were 2,748 deaths from all causes in Omaha during 1928, giving a death rate of 12.3 per 1,000 population. The total deaths from all causes in 1927 were 2,687. There was a rate of 20.0 births per 1,000 population, and a rate of 48 infant deaths per 1,000 live births. Pneumonia with a rate of 162.9 deaths per 100,000 population was the leading cause of mortality. Tuberculosis followed with a rate of 44.0; diphtheria with 5.8; typhoid fever 2.7; whooping cough 0.9; erysipelas 0.9; and scarlet fever with a death rate of 0.4 per 100,000 population. There were 312 cases of diphtheria, 37 of measles, 247 of scarlet fever, 101 of smallpox, 59 of mumps, 50 of whooping cough, 21 of typhoid fever, and 3 cases of erysipelas. —*World Herald*, Jan. 1, 1929.

Butte, Mont.—Deaths exceeded births in Butte during 1928. There were 1,001 deaths and 880 births for the year. During 1927 there were 879 deaths and 912 births.—*Montana Standard*, Jan. 10, 1929.

Regina, Sask.—The total number of deaths in the city of Regina for 1928 was 527, as against 395 in 1927. There were 1,360 births, as against 1,215 for the previous year. There were no serious epidemics in the city during 1928. —*Regina Post*, Jan. 8, 1929.

Toronto, Ont.—There were 6,883 deaths from all causes in Toronto during 1928, as compared with 6,285 for 1927. There were 607 deaths from pneumonia for 1928, as compared with 430 for 1927. Influenza combined with pneumonia resulted in 246 deaths for 1928, as compared with 109 for 1927.—*Daily Times*, Moncton, N. B., Jan. 3, 1929.

Quebec, Que.—Mortality figures in the city of Quebec for 1926, 1927 and 11 months of 1928 showed evidence of progress especially in the combating of contagious diseases. The death rates per 100,000 population from all causes for 1926, 1927 and 1928 respectively were 195.9, 120.0 and 64.1 for Beauce County; 160.3, 163.9 and 111.0 for Lake St. John County; 125.2, 86.7 and 55.1 for St. Hyacinthe County; and 89.9, 91.8 and 62.8 for Joliette County. —*Montreal Star*, Jan. 15, 1929.

Diphtheria Deaths in Massachusetts, 1927—During 1927 there were 4,750 diphtheria cases and 268 deaths reported in Massachusetts. The case fatality rate of 5.6 per cent is the lowest on record in the state. The mortality rate of 6.3 per 100,000 population is the second lowest on record, only being surpassed by the rate of 5.9 in 1926. A study of 117 diphtheria deaths occurring during 1927 was made, based upon a personal investigation by the State District Health Officers. Among the 117 deaths, 47.8 per cent were under 5 years of age, and 34.0 per cent were between the ages of 5 and 10 years. The largest percentage of deaths, 13.7, occurred among those aged 2 years. A physician was called at some time during the course of the illness in each of the 117 cases investigated. In a total of 94 cases, the economic status of 22 was good. Among 18.2 per cent of those of good economic condition the physician was called on the first day of illness, among 27.2 per cent the physician was called on the second day, and among 22.7 per cent, on the third day. The economic status of 42 of the 94 cases was fair. Among 7.1 per cent of these a physician was called on the first day of illness, among 11.9 on the second day, and among 33.4 on the third day of illness. Thirty of the cases had a poor economic status. Thirteen and three-tenths per cent of this class called a physician on the first day of illness, 10.0 per cent on the second day, 6.7 per cent on the third day, and 20.0 per cent on the fourth day of illness. Fifty-seven per cent of 112 patients were hospitalized. In 6 of 106 cases, the physician was said to have failed to make a primary clinical diagnosis of diphtheria. Antitoxin was administered in 114 of the 117 cases studied. The largest individual dose administered was 100,000 units; the smallest, 500 units. The largest total amount given any one case was 200,000 units; the smallest, 2,000 units. In 73.0 per cent of 96 cases, the physician administered antitoxin on the day of his first visit. In 11.5 per cent of the cases, antitoxin was administered 1 day after the first visit of the physician. The Schick test had never been performed on 102 of the 117 cases studied. Information is lacking for the remaining 15 cases.—Edward A. Lane, *New England J. Med.*, 199: 939–944 (Nov. 8), 1928.

Health in Iceland—During 1926 Iceland had a death rate of 11.1 per 1,000 population, and a birth rate of 26.1. The infant mortality rate was 49 per 1,000 live births. Three outbreaks of typhoid fever, which were traced to milk, caused 175 cases and 13 deaths. The outbreaks were overcome by isolation and preventive vaccinations. Seventy-one cases of diphtheria, mostly of a mild type, caused 2 deaths. The death rate from pneumonia was about 1 per 1,000 population, and the rate from bronchitis was 0.09 per 1,000. There were 3,115 cases of influenza, as against 941 in 1925. The death rate from tuberculosis was very high, about 2 per 1,000 population, and shows no tendency to decline. Tuberculosis of the lungs is more frequent in women than in men. About 20 per cent of the tuberculosis deaths were due to the meningeal form of the disease. There were 4 deaths from puerperal causes, a rate of 1.5 per 1,000 births. Thirty-two cases of syphilis were reported, including 14 foreigners, and 236 cases of gonorrhea, including 41 foreigners. The number of lepers showed a decrease. In 1921 there were 63, and in 1926 there were 49.

Vaccination has been legally enforced since 1910. In 1926, 3,060 children were vaccinated for the first time, and 2,215, aged 12 to 13, were revaccinated. —*Lancet*, 215: 828 (Oct. 20), 1928.

Heart Disease in Children—This study is based on the statistical analysis of case histories of 500 children, from infancy to 22 years of age, observed in a clinic under the same medical supervision during the 10-year period 1916–1927. Congenital heart defects occurred in 11.2 per cent of the total cases. Five and four-tenths per cent of the patients had definite organic diseases of unknown etiology. Twenty-five children, classified as harboring possible heart disease, had negative histories, slight heart enlargement and persistent systolic murmur. Of these children, 20 retained the same physical signs over the period of observation. Rheumatic infection occurred in 395, or 79 per cent of the 500 cases.

The average age of onset in 413 cases of rheumatic infection was 7.3 years. Recurrence of infection occurred in 85 per cent of those with initial infection at ages 3 to 5 and in 63 per cent of those infected after age 10. In 67.8 per cent of the rheumatic cases the duration of the disease had been from 1 to 5 years, in 21.8 per cent from 6 to 9 years, and in 10.2 per cent from 10 to 16 years.

A history of measles was present in 53.7 per cent of the cases, occurring between the ages of 3 and 5 years, in 36.9 per cent. Scarlet fever occurred in 10.2 per cent of the children. In 38.2 per cent of the cases it occurred between the ages 6 and 9 years. Polyarthritis occurred from 1 to 6 times in 65.8 per cent of 272 rheumatic children. Growing and joint pains occurred in 67 per cent of the 413 rheumatic children and were the first manifestations of infection in 26.6 per cent of the children. In 23 per cent of the cases the pains preceded polyarthritis, and in 10.9 per cent were followed by acute carditis. Forty-four and five-tenths per cent of the children gave a history of acute rheumatic carditis, or presented an attack while under observation. Heart involvement was exhibited in 79.5 per cent of the cases. On final examination 49.8 per cent of the rheumatic cases showed slight heart enlargement, 30.6 per cent moderate, and 17.6 per cent showed marked enlargement. Twelve per cent of the rheumatic children died, 22 per cent of the deaths occurring within 1 year of the onset of the infection. The most common age at death was between 11 and 14 years.—M. Wilson, C. Lingg and G. Croxford, Statistical Studies Bearing on Problems in the Classification of Heart Disease, *Am. Heart J.*, 4: 164–196 (Dec.), 1928.

Vital Statistics of Vienna, 1927—The population of Vienna for 1927 was 1,866,147, or 29 per cent of that for the whole republic. The total number of births in Vienna was 21,337 as compared with 24,064 in 1926. There were 26,379 deaths from all causes for 1927, and 25,378 for 1926. Infant deaths numbered 1,749, as contrasted with 1,889 in 1926. There were for the year 1927, 3,818 deaths from tuberculosis, and 3,882 for 1926; 2,308 deaths from pneumonia, and 2,386 for 1926; 198 deaths from diphtheria, and 99 for 1926; 76 deaths from scarlet fever, and 41 for 1926; 133 deaths from measles, and 9 for 1926; 33 deaths from typhoid fever, and 41 for 1926; 85 deaths from puerperal sepsis, and 37 for 1926.—Marriages, Births and Deaths in Vienna in 1927, *J. A. M. A.*, 92: 247 (Jan. 19), 1929.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

Progress Report of the Committee on Milk Supply *—Last year the Committee on Milk Supply submitted to the section a tentative draft of standard pasteurization plant requirements based upon the U. S. Public Health Service Standard Milk Control Ordinance and Code.† These requirements were printed as a supplement to the May, 1928, issue of the *American Journal of Public Health and The Nation's Health,* with the statement that the committee would welcome constructive criticism on the report for its guidance.

The committee has carefully reviewed the suggestions offered, and submits certain amendments for its 1928 report. Some of the more important of these amendments are:

1. Means for preventing contaminated condensation on the headers of milk coolers from entering the milk
2. The elimination of cloth strainers after pasteurization
3. A requirement relating to the finish of walls and ceilings
4. More rigid fly exclusion requirements
5. More specific requirements for milk pump materials
6. An item admitting consideration by state health departments of new methods of pasteurization demonstrated to be of at least equal efficiency
7. A requirement forbidding transportation of milk between pasteurization and bottling
8. The inclusion of new and detailed requirements for thermometers used in pasteurization process control, as formulated by a conference of the U. S. Public Health Service, the U. S. Bureau of Standards, the U. S. Department of Agriculture, and representatives of the principal American Instrument Manufacturers (held in April, 1928)
9. A requirement that the temperature shown by the indicating thermometers and the recording thermometer charts continuously throughout the holding period must be at least the temperature which the definition of pasteurization requires the thermometers to show

The committee wishes to repeat its invitation to the members of the section and of the Association to submit suggestions during the coming year.

Your committee further wishes to advise that the above report has been considered, and agreed upon jointly with the Committee on Milk Sanitation of the Conference of State Sanitary Engineers.

Control of Malaria and Mosquito Breeding at the Marine Barracks, Quantico, Va., during the Year 1927—This is a summary of the work done in the control of malaria and mosquito breeding at the Marine Barracks, Quantico, Va., during the year 1927, with a brief description of the personnel employed, their duties, material used with cost, and methods of control employed.

As a result of his studies the author concludes that with the use of airplanes: (1) 33 per cent Paris green in an inert dust is the most satisfactory strength under all wind conditions; (2) 1 pound of Paris green per acre is the proper unit; (3) material cost is approximately 70 cents per acre per season.

To show how effective has been the control the author cites that in 1922 the malaria admission rate was 28.26 per 100 and 0 in 1927.—W. M. Garton, *U. S. Nav. M. Bull.*, 26, 3: 747–754 (July), 1928. Abstr. O. C. Hopkins.

* Presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 16, 1928.

† This ordinance and code will be revised and printed by the U. S. Public Health Service in the near future.

Sanitary Engineering Aspects of Shellfish Pollution—This article gives a historical sketch of the relationship between oysters and public health. The author further discusses successively the biology of shellfish, the problem of pollution, both by domestic and industrial wastes, and specific Chesapeake Bay problems. Domestic sewage is dangerous from the standpoint of infecting the oyster, and if present in sufficient quantities destroys the oyster by virtual depletion of oxygen. Certain industrial wastes, such as cannery wastes, destroy oysters in the same way, while other industrial wastes, such as oil and tannery wastes, destroy oysters by virtue of toxicity.

Oysters may be contaminated and infected by growing in polluted waters and by improper handling. The floating of oysters for "fattening" is frowned upon by most authorities.

This article also contains a report of a survey by the Maryland Department of Health in the Chesapeake Bay problem, together with the laboratory findings.—Carl Speer, Jr., *Bulletin,* Maryland State Dept. of Health, 1, 3: 16–57 (Apr.), 1928. Abstr. A. H. Wieters.

An Outbreak of Infectious Diarrhea on Board the U. S. S. Melville, Attributed to Contamination from Gatun Lake, Canal Zone—At the time the U. S. S. Melville was in transit through the Panama Canal from Balboa, Canal Zone, to Colon, Panama, in March, 1927, about 6,000 gallons of water from Gatun Lake were taken on board for use in the boilers and stored in the ship's tanks after distillation. The cloudy appearance and unpleasant taste of the water attracted attention, so that samples of the water were collected and cultures made which indicated a heavy pollution of the water with *B. coli.* At the same time a number of the crew developed symptoms of mild enteritis.

Following the isolation of *B. coli* from the fresh water supply of the ship and the appearance of acute cases of enteritis among the crew, the water was pumped overboard and all tanks cleaned. They were then filled with freshly distilled water and disinfected by the addition of a solution of chlorinated lime. After this procedure no other cases of enteritis developed at the time. No water was taken on board during the return trip, so that water in tank No. A2, to which a later outbreak of acute enteritis was attributed, must have been overlooked when the other tanks were emptied, cleaned and disinfected.

On June 30, a junior dentist on board became ill with symptoms of severe gastroenteritis. On July 12 and 13, a number of patients were admitted to the sick list.

Cultures were made from the fresh fruits, vegetables, the scuttle butt and each individual tank. Water from the scuttle butt was found to be heavily contaminated with *B. coli,* and water from tank No. A2 gave a growth of a Gram-negative, motile bacillus later identified as *Bacillus fecalis alcaligines.* As a result of the investigation to determine how the contamination of the water in tank No. A2 had taken place it is believed either that water from Gatun Lake found its way into this tank through an open valve, or that infected water was delivered by the ship's evaporators to the tanks while in Gatun Lake.—Dallas G. Sutton, *U. S. Nav. M. Bull.,* 26, 3: 727–732 (July), 1928. Abstr. O. C. Hopkins.

Phenol Pollution of Public Water Supplies in the Middle West—This article discusses in some detail the development of control measures in connection with the pollution of public water supplies by phenol wastes from by-product coke plants. Mention is first made of the pollution of the water

supply of McKeesport, Pa., where the city secured a permanent injunction in 1918 against the Clairton By-Product Coke Plant of the Carnegie Steel Company to prohibit the discharge of their wastes into the stream. The company promptly developed a method of utilization of the waste in quenching the coke. Approximately $1,000,000 was spent by the company to eliminate this nuisance. Mention is also made of the interstate conferences arranged by the Surgeon General of the U. S. Public Health Service on May 18, 1923, January 24, 1924, and at Pittsburgh, Pa., on April 14, 1925. On November 17, 1924, an interstate stream conservation agreement was entered into by the states of Ohio, Pennsylvania, and West Virginia. Since this time the states of Kentucky, New York, Maryland, Illinois, Indiana, and Tennessee have joined the agreement, which provides for a coöperative program to control the pollution, and to notify the various plants of accidents or "spills."

Sources of phenol from by-product coke plants are given as follows:

Waste	Per cent phenol in plant waste	Approximate lbs. phenol per ton of coal carbonized
Ammonia still ...	70 to 80	0.3 to 0.5
Final cooling water	20 to 25	0.02 to 0.08
Benzol plant wastes	2 to 5	certain taste producing light oils
Gas condensate waste	Variable	certain taste producing light oils

Three methods of phenol elimination are mentioned: coke quenching, extraction of the phenol, and biological absorption. Objections to the quenching process include discoloration of the coke by lime deposited from the ammonia still wastes, disagreeable phenol odors, and deterioration of metallic equipment in the vicinity of the quenching tower by chloride from the lime waste, estimated at $200,000 annually at one plant with 10 quenching towers.

The extraction process was first developed at the National Tube Company, Lorain, O., in 1924, with a recovery of 76 per cent of the phenol. Later, plants were installed at the Iroquois Gas Corporation, Buffalo, N. Y., in 1925; at the Hudson Valley Coke Corporation, Troy, N. Y., in 1926; and at the Domestic Coke Corporation, Fairmont, W. Va., in 1927. These plants have developed an efficiency of 97 per cent. The cost at Fairmont was $25,000 for 1,000 tons coal daily capacity, and at Troy, $60,000 for 3,750 tons coal daily capacity. It is stated that the operation is self-sustaining. After tests at Rochester, N. Y., gas plant wastes were received in the public sewers with no deleterious effects to the Imhoff tanks. Rather detailed information is then given regarding the recovery installations at other places.

The conclusion contains an application of the data to the Sanitary District of Chicago, with certain recommendations.—Herman N. Bundesen, *Water Works*, 67, 6: 240–246 (June), 1928. Abstr. C. M. Baker.

Effect of Certain Illinois Waters on Lead—The preparation of this article was brought about by an investigation of a case of sickness in Champaign, Ill., which was diagnosed as lead poisoning. An analysis of the water which the patient had been drinking showed 0.08 p.p.m. of lead present.

The opinions of various authorities on the allowable limits of lead in water are cited. There are some data on the important factors causing the solution of lead as well as a short résumé on the analytical determination of lead. There are also tables showing compiled data on lead in water and a discussion of the effect of Illinois waters on lead. The

article is concluded with some authoritative data on prevention of lead corrosion. A bibliography is given on the subject.—O. W. Rees and A. L. Elder, *J. Am. Water Works A.*, 19, 6: 714–724 (June), 1928. Abstr. A. L. Dopmeyer.

Anopheles Density Index in Malaria Research and Control Work—The author calls attention to the value in any malaria investigation of the anopheles density index and gives directions as to the proper method of obtaining such index. In the vicinity of the field station of the Bureau of Entomology at Mound, La., the numbers of anopheles found under the houses of tenants on cotton plantations afford a good basis for determining density indices. The author illustrates by a series of charts and tables which exhibit the anopheline density indices of several plantations near Mound for different months of the year and for various years. A remarkable fall in the density of the region is recorded for the three years following 1923, a diminution due to droughts. The highest monthly index occurs in July. The flood of 1926 destroyed much of the aquatic vegetation in the lakes near Mound, and it may be some years before the normal production of anopheles is reëstablished there.—W. V. King, *South. M. J.*, 21, 9: 763–767 (Sept.), 1928.

Dissolved Iron and Manganese in Stored Water at Kernersville—This valuable contribution to the limited literature of manganese and iron removal reviews unusual problems developed at Kernersville, N. C., when a new filtration plant designed to treat a typical turbid water of a flowing stream was placed in operation to treat the same water after storage in a shallow reservoir containing large quantities of organic matter. Storage of this water led to a marked change in its quality, leading to the solution of manganese and iron from mineral deposits at the site and to a large increase in the color of the water. Experiments conducted at the plant indicate that aeration of the water failed to precipitate the iron and manganese, probably due to the large organic content.

Pre-chlorination of the water, however, led to the precipitation of the iron and manganese, but the organic color remained unchanged. Addition of lime to the raw water produced excellent flocculation of the iron and manganese, but no change in the organic color. Subsequent coagulation with alum, however, resulted in a reduction of the color. Experiments were duplicated on a plant scale by the addition of lime to the raw water entering the mixing basin. The dose of lime was determined by the maintenance of a faintly caustic reaction to phenolphthalein. The formation of the iron hydroxide was extremely rapid, allowing the alum solution to be added about half way down the mixing chamber. The alum dose was adjusted to maintain the optimum pH for color coagulation. The sedimentation of the floc, however, was slow, so that the settled water was more turbid than desirable, thus requiring frequent washing of the filters and the use of large volumes of wash water.

The above situation indicates the great desirability of thoroughly studying the quality of a raw water to be treated before the final plans for water purification plants are completed, in order that the plant may be provided with the necessary auxiliary equipment and for special treatment when such is necessary.—W. H. Weir, *J. N. C. Section Am. Water Works A.*, 5, 1: 119–126, 1927. Abstr. C. R. Cox.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

The Biochemical Reaction of Lead in the Body—The article reviews the theories and findings concerning the distribution and form of lead in the body, and of equilibrium between its soluble, or toxic diphosphate form, and its insoluble, or non-toxic triphosphate form. Since lead is in the blood, it comes in contact with all of the body tissues and this accounts for its multiple symptoms, which are usually grouped by the systems involved; the blood, the gastrointestinal tract, the nervous system (both central and peripheral), the skeletal system (both muscles and joints), the cardio-vascular system, the urinary system, the reproductive system (the germ cells).—May R. Mayers, *Indust. Hyg. Bull.*, New York State Dept. of Labor, 5, 7: 26–28 (Jan.), 1929.

Standards for Workmen's Compensation Laws—The proposed standards concern: I. The scale of compensation, including the matter of medical attendance; waiting period; compensation for total disability and for partial disability and for death, the latter including funeral expenses; compensation for the widow or widower or children or other relatives, or alien non-resident dependents, including the maximum and minimum compensation for death; and the commutation of periodical compensation payments. II. The employments to be included. III. The injuries to be included, taking into consideration occupational diseases. (Occupational diseases are now compensated in California, Connecticut, Hawaii, Massachusetts, North Dakota, the Philippines, Wisconsin, under the three federal laws, and to a limited extent in Illinois, Minnesota, New Jersey, New York, Ohio and Porto Rico.) IV. Other remedies than those provided for by the Compensation Act. V. Security for the payment of compensation awards. VI. Organization of the accident board. VII. Procedure for settlement of compensation claims. VIII. Reports of accidents. IX. Rehabilitation.—Committee on Workmen's Compensation, American Association for Labor Legislation, *Special Bulletin*, Revised to Jan. 1, 1929 (131 East 23d Street, New York, N. Y.).

The Problem of Industrial Health—The factory worker "goes stale" because of the monotony of his work, and the executive, because of (mental) strain. Physical examinations show about the same disabilities in both. Six chief causes of death—diseases of the heart and circulation, tuberculosis, cancer, apoplexy, kidney disease and diabetes—constitute nearly one-half of the 1,219,019 annual deaths in the 40 to 50 million "gainfully employed" in the country. These chronic diseases represent "silent sickness," because during the greater part of their duration no obvious disability is shown. Dr. Charles H. Mayo states that 86 per cent of all deaths are due to infections, and the same chronic infections exist in the worker as in other members of society. No adjustment of working hours or operations will meet "silent sickness" and its fundamental control lies in periodic health examinations, which the Metropolitan and Guardian Life Insurance Companies have shown will decrease mortality from 18 to 23 per cent (charts accompany).

Not only the man on the sick list, but the man who is one-half, one-quarter, or one-tenth sick must be considered. Disabilities are liabilities which have a cumulative effect. Any program which permits the man over 40 to be considered a physical and economic liability is unsound, while a thorough-going program of prevention, joined up to a mutual benefit association, would save enough lives in industry to offset the need for foreign labor. The worker's best investment of his own time, interest and some of his money is in his health. A reasonable coöperative plan is all that is needed.—Eugene L. Fisk, *Law and Labor*, X, 9: 196–200 (Sept.), 1928.

The Health of the Wage-earner—Industry must solve the cost of sickness in workers, or state legislatures will soon do so to the increased cost of goods. The Life Extension Institute states that the cost of preventable sickness and death among the gainfully employed in this country amounts to $1,800,000,000 annually, which represents half of the total disability. The answer is periodic health examinations. The Metropolitan Life Insurance Company states that there has been a reduction of 18 per cent in mortality, and the Guardian Life Insurance Company places it at 23 per cent, as the result of such examinations, while at some ages the reduction has been 50 per cent. Spending $100 a year on a machine to keep it in good condition, to be operated by a man who is only 50 per cent fit, is poor economy. The expense of health supervision should amount to 1½ per cent of the pay roll. This cost should be divided 50–50 with employes and the fund handled by a mutual benefit association which invests in a group life insurance policy. It should also provide two-thirds pay for 26 weeks and a competent physical examination annually. If properly run, such a plan will lay up from 20 to 40 per cent of its income, which can be spent for numerous accessory needs. The writer cites examples of benefits to employes in his own construction company "because we have a plan that is working along the right lines."—Harold A. Ley, *Law and Labor*, X, 9: 189–194 (Sept.), 1928.

Lead Poisoning from Lead Piped Water Supplies—Most lead poisoning is attributed to certain occupations. The Industrial Clinic of the Massachusetts General Hospital found almost 11 per cent of lead poisoning, however, to be of non-industrial origin. A chemical study of 102 lead conducted water supplies in Massachusetts towns showed that all contained lead. The lead content was most strikingly related to the carbon dioxide content. Of 253 exposed persons, 63, or 24.9 per cent, were poisoned. The incidence was less in young children and greater in adults. Women showed a lower incidence of poisoning than men.—Wade Wright, *J. Indust. Hyg.*, 10, 7: 234–235 (Sept.), 1928.

Tuberculosis as an Industrial Accident—Closely analyzing 76 cases (Mass.) in which tuberculosis of the lungs was the "personal injury" involved, and for which compensation was demanded, has resulted in some interesting findings. Of the cases, 27 were granite workers with an average of 30 years' exposure. In the case of 12 others there could be no doubt that the tuberculosis in each case constituted a true personal injury, as each one followed a fairly serious accident, usually involving the chest. On the other hand, there were 20 cases in which there was no relation between the accident or occupation and the disease. In fact in 14 of these no tuberculosis was found, the correct diagnosis being various other bronchial and lung conditions. One claimed glass dust hazard, but investigation showed such to be practically im-

possible. One claimed soapstone dust hazard, but no lung trouble was found, nor did the hazard seem appreciable. One claimed sulphuric acid fumes as a hazard, but investigation showed no evidence of such fumes although the acid was used. Another claimed dust from copper wire, but investigation showed no evidence of any dust whatsoever. Another claimed dust from a belt of sandpaper where it was found that protection was good, the amount of dust small and the periods of exposure very short. These cases show that tuberculosis is used as a convenient diagnosis on which to base claims for compensation in far too many instances.

Finally there was a third group of 14 border-line cases in which there was a possibility but not a probability of a just claim. (A detailed discussion of each of these cases is given.)—John B. Hawes, 2d, *Am. Rev. Tuberc.*, XVIII, 6: 767–775 (Dec.), 1928.

Some **Measurements of the Transmission of Ultra-Violet Radiation through Various Kinds of Fabrics**—It is necessary to examine black and white samples of the same cloth or fabric, to examine different kinds of weaves, and to determine the effect of dyes, before drawing conclusions regarding the transmission of ultra-violet rays. Even a slight yellowing with age decreases transmission. After deducting for the openings between the threads, the actual transmission through the threads, especially when dyed, is only about 5 to 10 per cent. As the threads usually occupy from 95 to 99 per cent of the total space, the transmission through a fabric material itself is usually insignificant. Therefore, transparency to ultra-violet radiation demands an open-weave fabric. On this basis fabrics made of silk and heavy wool yarns compare favorably with cotton and rayon. Evidently the question of the composition of the material for transmitting the ultra-violet has been overestimated. In passing through two or more layers of fabrics, transmission is greatly decreased.

The best reflector for sunlight is a closely woven white fabric, and such should be worn to protect the body from the ultra-violet rays in the tropics; a further protection would be to wear an inner garment of thin closely woven material of wool or cotton, dyed with a substance that absorbs ultra-violet rays. It was found that transmission through feathers was fairly high, even for colored feathers (tables and graphs accompany).—U. S. Bureau of Standards, *Journal of Research, Research Paper 6*, Aug., 1928, pp. 105–124.

Physiological Factors of Mine Ventilation—An historical resumé of recent investigations on silicosis is discussed in the first 5 pages, followed by a summary of recent investigations on high temperatures in which the importance of acclimatization and the protection against heat in deep mines is emphasized. Drinking water in the Witwatersrand contains a little lime juice and 7 gm. of ordinary salt per gallon, the tins being provided at all levels in the mine. The author discusses in some detail the methods of mine refrigeration, the findings of fatigue studies, and the relations of the "comfort zone." The article concludes with a summary of recent investigations of toxic gases found in mines, viz., oxygen, methane, hydrogen sulphide, and carbon monoxide.—R. R. Sayers, U. S. Bureau of Mines, *Circular No. 6089*, Nov., 1928, 16 pp.

The Ultra-Violet Transmission of Various New Glasses and Window Glass Substitutes as Compared with That of Common Window Glass—Ordinary window glass shuts out ultra-violet rays below about 310 $\mu\mu$. The U. S. Bureau of Standards finds that the

total transmissions of various glasses, when new, are as follows:

Trade Name	Per Cent Transmission
Fused quartz	92
Corex	92
Helioglass (Vioray)[1]	50
Vitaglass	50
Cel-o-glass[2]	20
Quartz-lite	5
Flexoglass[3]	1
Common Window Glass	0 to 5

1. Vioray is the foreign trade name for Helioglass.
2. This consists of a fine wire screen whose interstices are covered with cellulose acetate.
3. This is a loosely woven fabric usually covered with paraffin.

A sample of Vitaglass which had been in a hospital window in Rhode Island for a year was found to have a transmission of 25 per cent at 302 $\mu\mu$ (for thickness = 2.3 mm.). Helioglass was found to decrease in transmission at about the same rate. Corex glass appears to undergo no appreciable change in transmission when exposed to solar radiation, but a marked decrease when exposed to a quartz mercury arc. Cel-o-glass (cellulose acetate), which when new transmitted 30 per cent, after being exposed to daylight for 8 months transmitted only 5 to 10 per cent. Quartz-lite is not appreciably affected by sunlight, and only slightly by the quartz mercury arc. The thinner the glass in any case, the greater in general will be its transparency to ultra-violet rays (tables and one chart accompany).—U. S. Bureau of Standards, *Letter Circular 235* (3d rev.), Jan. 14, 1928, 6 pp.

Health and Recreation Activities in Industrial Establishments—This illustrated bulletin considers medical and hospital service for employes, sick leave with pay, vacations with pay, lunch rooms, indoor recreation, outdoor recreation, disability funds, group insurance, education, encouragement of thrift, administration of personnel work, and welfare work in company towns.—U. S. Bureau of Labor Statistics, *Bulletin No. 458*, Feb., 1928, 94 pp.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Synthesis of Vitamin B in the Rumen of the Cow—One of the authors in previous studies of vitamin B requirements disclosed that a calf will grow to maturity and produce offspring on a ration deficient in vitamin B complex. These observations led to the present study to determine the microörganisms in the rumen responsible for the synthesis of vitamin B complex. A pure bred heifer with a fistula 3½ inches in diameter in the rumen was the experimental animal. Alcoholic extracts from the rumen were taken 12 hours after feeding in portions of about 30 pounds and the material was incubated for 5 days at 37° C. in order to induce the growth of bacterial flora. Ethyl alcohol was added until approximately 70 per cent solution was obtained, which was filtered off and evaporated to dryness at 50° C., 1 gm. of the dry extract representing 25.4 gm. of the fresh rumen material. Experimental rats, 21 days old and about 40 gm. in weight, were fed a ration of casein, agar, olive oil, dextrine, dextrine rumen extract and McCollum and Simmonds mixture 185. Olive oil was incorporated in the ration in both normals and controls as the animals refused to eat the rumen extract because

of the butyric acid. In addition, cod liver oil was given to insure adequate vitamins A and D. Growth curves indicate the vitamin B complex in the rumen extract as the animals maintained good growth through an 8-week period, pointing to the synthesis of this complex in the cow's rumen. Microscopic examination of rumen smears showed neither acid-fast bacteria nor yeasts but a bacterium producing pale lemon-yellow colony which had not been previously described. The authors designate it "Flavobacterium vitarumen." Cultures of this organism were grown on suitable mediums, the growth washed off with sterile water and evaporated to dryness at 50° C. Similar feeding technic for the dried bacterial meal was employed as with the rumen extract. The chart indicates the satisfactory average growth of the rats. It is concluded that the vitamin B complex was produced in the rumen by bacterial fermentation and an explanation is offered as to why cattle may grow to maturity producing normal offspring and normal milk on an insufficient vitamin B ration.—S. I. Bechdel, Hannah E. Honeywell, and R. Adams Dutcher, *J. Biol. Chem.*, 80: 231 (Nov.), 1928.

The Manganese-Copper-Iron Complex as a Factor in Hemoglobin Building—Previous work has shown both manganese and copper effective in hemoglobin regeneration, and the high purity iron salts ineffective. The work here describes the results obtained by the addition of copper individually and in conjunction with the milk-iron diet. Four-week old rats were placed on whole milk diet until the hemoglobin content was reduced. Fresh cow's milk was fed *ad libitum* and the supplement added to the morning feed. Weight determinations were made weekly, and hemoglobin determinations were made with a Fleischl-Miescher hemoglobinometer from blood secured from the caudal vein puncture. A table is given showing hemoglobin growth data for rats on the milk-iron diet, the iron component being prepared from pure iron wire. Rats with high hemoglobin at the start utilized iron to some extent, but those with low hemoglobin could not utilize iron without the supplements. The milk-iron diet was supplemented with 0.05 mg. copper per rat per day in the form of the sulphate prepared from electrolytic copper. All animals showed increased hemoglobin in accordance with reports of previous workers. Milk-iron diet, supplemented with 0.1 mg. of manganese per animal per day in the form of the chloride from manganous carbonate, showed good growth and hemoglobin increase. Few failed to respond. When both copper and manganese supplemented the milk-iron diet the most rapid response in hemoglobin of any group was evident, confirming the suggestion of Whipple that the evidence points to a group of substances as the active principle.—R. W. Titus, H. W. Cave, and J. S. Hughes, *J. Biol. Chem.*, 80: 565 (Dec.), 1928.

The Mineral Constituents of Cranberries—Most of the nation's supply of cranberries grows in Cape Cod whose ground waters are noticeably high in chlorine effected by the proximity of the ocean. The mineral content of cranberries was studied on ½ barrel packages received at intervals during 1926. The air-dried, ground berries were analyzed according to the Methods of Analysis, Association of Official Agricultural Chemists, except that potassium was weighed as the perchlorate and iron was determined in samples which had not been cut, and had been ground in a porcelain mortar. A table is given indicating a relatively high content of manganese. Total ash is low, generally less than 0.2 per cent, with an alkalinity of about 2 c.c. normal NaOH per 100 gm. berries. A previous

paper by the author (*J. Biol. Chem.*, 79: 409, 1928) showed iodine content from 26 to 35 parts per billion.—Fred W. Morse, *J. Biol. Chem.*, 81: 77 (Jan.), 1929.

Antirachitic Potency in Relation to Volume of Oil in the Liver of the Cod—A variability in the antirachitic potency of cod liver oil in relation to vitamin A has been known for some time. As a rule, livers assayed have been those obtained in spring and summer months when they are fat, large in proportion to the weight of the fish, and contain a large amount of oil. In fall and winter the livers decrease in size as well as in oil content. The authors have had an opportunity to study a large number of cod in the Bureau of Fisheries, Woods Hole, Mass., throughout the year, and the records show that fish livers obtained at different seasons are of varying sizes and varying contents of oil. The livers were extracted with cold ether and, after evaporating, the remaining oil was assayed biologically by placing young rats on a low-phosphorus McCollum ration and noting the percentage of oil necessary to produce calcification within 5 days. On this method, a score of 100 was established for high grade medicinal cod liver oil and the accuracy was assured by the use of a large number of animals. Tables are given showing the potency of oils from individual livers compared with the weights of the livers, the amounts of the oil in the liver and the ratio between them. The low potency was 150 and the high 20,000. In the first case the liver oil ratio was 5 and in the latter it was 167, and in this instance the liver which weighed 45 gm. contained only 0.27 gm. of oil. The authors concluded that, for a fish of given size, antirachitic potency varies invariably with the oil in the liver, provided the livers are decreased in fat content and not increased. Segregating a number of the low potency and high potency and comparing them, it was found that in the high group the figure was about 30 times that of the low, but that the average weight of the livers is only about $\frac{1}{3}$ in the former case of those in the latter, and the average quantity of oil about $\frac{1}{60}$ of those in the low group. The question as to how the antirachitic factor is soluble in liver fat when the liver fat is consumed is explained by the possibility of the oxidation of the liver fat in the course of starvation. In an attempt to answer the question as to whether this vitamin is synthesized by the liver, cod liver was divided into three different parts; one was extracted with ether, one boiled to destroy the enzymes and then extracted with ether, and to the third ergosterol was added as a substrate. Biologic assays showed no distinction in potency among the three portions of the liver, indicating no activation of the ergosterol by the liver cells. The authors, however, feel this is not conclusive in representing conditions *in vivo*. It is pointed out that cod liver oil may be 200 times as potent as that designated "high grade," and that such potent oil is very dark and obtainable only in very minute amounts.—Alfred F. Hess, Charles E. Bills, Edna M. Honeywell, *J. A. M. A.*, 92: 226 (Jan. 19), 1929.

Mucosus Organism from Suppurative Lesions of Rat on Diet Deficient in Vitamin A—Following the theory that deficiency of vitamin A causes such a reduction in cellular activity that it amounts to a deficiency of glandular activity and that this, in turn, brings about secondary changes, bacterial invasion and death, cultural studies of a group of animals dying from avitaminosis were made. Cultures were taken from the kidneys and from the ears of 31 white rats immediately after their death from experimentally pro-

duced deficiency in vitamin A. *Staphylococcus albus*, an organism of the Proteus group, and *B. coli* were isolated in a few cases but an encapsulated, Gram-negative, coccoid bacillus apparently belonging to the mucosus capsulatus group was isolated from 15 cases. In 12 of these cases it was the only organism present in the cultures. Morphological, cultural, serological and pathological studies of the organism showed it to be a Friedländer-like bacillus of low virulence for rabbits, guinea-pigs, mice and white rats when injected intraperitoneally or intravenously. Extending the study to other groups of animals, from 50 rats on A-deficient diets, representing 3 different stocks, 21 strains were isolated. In 13 normal rats, 3 rats on B-deficient diets, and 9 rats on D-deficient diets, all without obvious infections, cultures from the ears and nose failed to reveal the organism. Although obviously more frequently present in the suppurative conditions of the animal on an A-deficient diet, it is probably a secondary invader of mucosa of the respiratory tract, made suitable for its invasion by the dietary deficiency.—William L. Bradford, *J. Infect. Dis.*, 43: 407 (Nov.), 1928.

Thermophilic Bacteria in Canned Foods—The organisms described in this paper were isolated in the examination of 65 cans of food, including normal and spoiled corn, sound and "flat sour" peas, tomatoes, beans, pumpkin, meats, fish, evaporated milk processed cream and "swelled" canned fruits. Twenty-three cultures were isolated and studied in detail. These cultures were obtained from market corn and peas incubated at 55° C., from "flat sour" peas, and "swelled" cans of pumpkin. The remaining cans of normal and spoiled foods did not yield thermophiles. The cultures fell into 2 groups: 21 apparently closely related and probably identical strains; and 2 that corresponded with each other but not with the majority of those isolated. The minimal temperature for growth of the organisms studied was 42° C. and the optimum temperatures were between 55° C. and 62.5° C. At pH between 5.8 and 8.2 growth occurred within 18 hours at 55° C. regardless of the reaction. All the strains studied fermented dextrose with the production of acid but not gas. They also formed acid from various other carbohydrates. In studying the resistance of the spores to heat it was indicated that 17 hours at 100° C. was not sufficient to destroy the spores in the given medium with the given concentration of spores, which varied from 36,000 to 500,000 per c.c. as determined by the plate method. Sourness, with pH 4.7 to 5.5, was produced by inoculating peas and corn with organisms of the larger "flat sour" type group. The 21 organisms of this group which were identical and which were isolated from "flat sour" vegetables were found to resemble closely *B. stereothermophiles* Donk and were considered the cause of "flat sour" spoilage. The 2 remaining cultures seemed unlike the others and unlike any previously described in the literature. They were considered a new species and named *Bacillus pepo*.—Myrtle Shaw, *J. Infect. Dis.*, 43: 461 (Nov.), 1928.

Discontinuous Variation in the Virulence of B. aertrycke (Mutton)—It had been observed that different strains of *B. aertrycke* (mutton) showed a definite decrease in virulence when subcultured daily in broth. This change in virulence suggested the possibility of some bacterial dissociation resulting in the replacement of the original virulent organisms by variants much lower in virulence. Another possible explanation of this phenomenon was that the virulence of the constituent organisms was gradually falling, be-

coming evident only at a given point on the downward curve based on the four-dose technic used by Lockhart. In order to test which of these possibilities —if either—was true, a series of experiments was undertaken, including a repetition of Lockhart's experiments, testing, however, the virulence not only of the whole culture but also that of some of its constituent organisms. On the basis of these experiments the author concluded: (1) That a pure culture of *B. aertrycke* may contain individual organisms showing markedly discontinuous variations in virulence, when tested by intraperitoneal inoculation of mice. Side by side regardless of whether colonies were rough or smooth forms individual organisms comprising the parent strain showed marked difference in virulence, although otherwise indistinguishable from one another by the ordinary methods of examination; (2) That when a given strain comprises organisms showing discontinuous variations in virulence, the virulence of the entire culture is similar to that of the most virulent variants. While not entirely conclusive the experiments indicate that this proposition may be subject to definite quantitative limitations. It was observed that if even 10 per cent or less of the constituent organisms of a culture are fully virulent, the whole culture will itself prove fully virulent; (3) Whole cultures exhibiting a similar degree of virulence are not necessarily similar in constitution. In other words, the virulence of a culture of *B. aertrycke* in its entirety affords very little guidance to the virulence of the individuals present or to the proportion in which the variants are present; (4) There is no apparent basis of comparison to indicate any relationship between the possession of a type or group antigen and the degree of virulence of *B. aertrycke* (mutton); (5) There is no constant relationship between the virulence and the infectivity of a given strain of *B. aertrycke* when introduced directly into the tissues; (6) Daily subculture in broth of this organism with incubation either under ordinary aerobic conditions or in an atmosphere of 1 per cent or 21 per cent oxygen maintained by bubbling the gas continuously through the culture results in time in a complete fall in virulence. The evidence brought forward by the author indicates that it is wrong to regard a whole pure culture as a collection of homogeneous organisms. Any given culture consists of an extremely large number of individual organisms which vary in one or more respects. Side by side in the same pure culture there have been found virulent and entirely avirulent individual organisms. It is suggested that loss in virulence may be explained by replacement of virulent individuals of a culture by avirulent or weekly virulent organisms. —G. S. Wilson, *J. Hyg.*, 28: 295 (Dec.), 1928.

CHILD HYGIENE

MERRILL E. CHAMPION, M. D.

A Study of 370 Deaths of Primiparae—The problem of maternal mortality is such a pressing one, and so little is really known about the basic factors involved, that every death in childbirth should receive the most careful study possible. To individualize cases in this fashion is relatively expensive and the results thus far have yielded more chaff than grain; but by staggering the load among many health departments and other agencies, returns will undoubtedly come in time.

This study which Dr. DeKruif reports is an analysis of causes of death among a group of primiparae whose histories were investigated as part of a larger study of 984 deaths of mothers in childbirth, undertaken by the Massachusetts Department of Public Health. The data were obtained from the physicians who had charge of the patients and from hospital records.

The two principal causes of death among these primiparae were sepsis (primary and secondary) and the toxemias. Cesarean section leads as the method of delivery. This operation seems, however, to have been—with the exception of low forceps—the measure most favorable to the baby.

Other interesting facts brought out are: The toxemia group led as a cause of prematurity; there were 157 hospital booked, 119 hospital emergency and 80 home deliveries. Seventy-two per cent of these primiparae were operative cases whereas 53 per cent only among 614 multiparae were operative.

There was evident lack of prenatal care in 73 per cent of the cases. One-third had no prenatal care at all. It should be said, however, that in about one-third of the cases the cause of death had little or no apparent relationship to the prenatal care.—Mary DeKruif, M.D., A Study of 370 Deaths of Primiparae, *New England J. Med.*, Dec. 27, 1928.

Maternal Care in Berlin—According to recent reports, the city of Berlin endeavors to protect the health of its prospective mothers by means of 40 municipal centers for the care of pregnant women. These centers are staffed by gynecologists, graduate nurses and officers of the juvenile and public welfare departments.

The service offered here is free to all, rich or poor. No credentials of any kind are required. Among the types of service offered are: examination, medical advice, medical treatment, financial aid, legal information, accommodations before and during confinement, accommodations for mother and child, and nursing care at home.—Organization of the Care of Pregnant Women in the City of Berlin, Foreign Correspondence, *J. A. M. A.*, Dec. 29, 1928.

Maternity Care in the Australian Bush—For a number of years Australia has had a system of "maternity benefits," consisting largely of a cash subsidy at the time of confinement. Apparently nearly every mother of a newborn baby avails herself of this maternity benefit, so-called. This service, so far as one can judge by the figures, has had no appreciable effect on the maternal death rate of that country.

Another plan, this time directed toward the rural districts of the State of

Victoria, at least so far as the white inhabitants are concerned, has been in operation for more than 17 years. This consists of nursing, medical and hospital service sponsored by the Victorian Bush Nursing Association.

The report of this organization of its work during the 5 years ending in 1927 is most interesting. Twenty-two hundred and seventy-three confinements of white mothers were attended without the loss of a mother. The "bush" now has the lowest maternal mortality rate in Victoria, with the city of Melbourne—containing more than half the population of the state—holding the record for the highest rate. The average rate for Victoria is given as 5.58 per 1,000 live births.

It is natural enough that the association should attribute this favorable mortality experience "to the adequate training of both doctors and nurses and their excellent coöperation, insistence on continuous antenatal supervision, and properly planned, staffed and equipped hospitals to which all complicated cases are removed at the earliest moment." Whether this is the whole story or not is not so certain. We have yet much to learn regarding the part played by racial and other factors entirely apart from measures consciously directed against the maternal mortality.—Based on Note in *The World's Children*, Dec. 19, 1928.

Tonsillectomy in the United States—A recent editorial in the *Journal of the American Medical Association* discusses at some length various studies which have brought forward evidence as to the value of tonsil removal. It quotes a government report as estimating that about one-third of all operations since 1924 among the American urban population were for the removal of tonsils or adenoids.

The results of tonsillectomy may be viewed from various angles. The first question that comes to mind is, naturally—what is the effect on the incidence of rheumatism?

Kaiser reported on 48,000 school children, in 20,000 of whom the tonsils had been removed and in 28,000 of whom they had not been removed. He found the incidence of rheumatic fever, joint pains or growing pains and chorea slightly less in the tonsillectomized patients than in those whose tonsils had not been removed, but the difference was so slight as to be almost negligible. However, he calls attention to the fact that many with rheumatic manifestations in the tonsillectomized group had had their symptoms before operation.

Rheumatic heart disease was found in 450 of the 20,000 children with tonsils removed as compared with 817 cases among the 28,000 children not operated on.

Turning to other diseases, Collins and Sydenstricker from Hagerstown, Md., report a decrease in all respiratory diseases in tonsillectomized children; but this decrease was not great except in the case of tonsillitis and sore throat. Morbidity from non-respiratory causes was not noticeably lessened. On the other hand, during a 4-year period more scarlet fever, mumps, measles, whooping cough and chicken pox occurred in the tonsillectomized than in the non-tonsillectomized group. Diphtheria proved the exception with 4.6 cases per 1,000 in the non-tonsillectomized cases as compared with 1 per 1,000 in the children who had had their tonsils removed.

It is to be pointed out that two factors have to be considered in judging these figures—first, many tonsillectomies are imperfectly done, leaving a residue of tissue which renders the patient worse off than before; second, confusion is injected into the situation by the fact that there is as yet no uniformity regarding what constitutes a "normal" tonsil and what is the significance of an "enlarged" tonsil.—Tonsillectomy in the United States, Editorial, *J. A. M. A.*, Oct. 20, 1928.

Behavior Problems in Children under Three Years of Age—Preventive mental hygiene, we realize, has not kept up with the advancement in preventive medicine. The feeling that the specialist only can handle behavior problems among young children has been too prevalent. It is the family physician, after all, who has the opportunity to detect such problems, as he gets these young patients first. "The prevention of rickets with its subsequent malformation, which the orthopedist would have to correct, is analogous to the prevention of behavior disorders, whose subsequent maladjustments must be handled by the psychiatrist."

Mental and emotional life begin at birth. Behavior problems should be discussed with the mother as often as she visits the doctor regarding the physical care of her child. The earliest feelings of security and protection so necessary to the infant are apt to be prolonged by the fond parents and thus make trouble. Physical development is beyond the parents' power to delay and incoördination between physical and psychic growth results, which leads to behavior disturbances.

All ordinary reactions occur in all children to some extent, such as crying when left alone and refusing to go to sleep in the dark. It is only when such reactions are excessive and prolonged beyond the regular age limit that they may become difficult to overcome. A normal child meets new situations—weaning, toilet training, etc.—with comparatively easy adjustment, but the child who deviates from normal behavior will find it difficult and may show aggressive revolt by means of tantrums, crying spells, etc. The coöperation of all the persons in the child's environment is essential to effect a change of behavior. Thorough physical examination should precede all treatment, as abnormal organic conditions may be present.

The author illustrates her conclusions by interesting case stories.—Margaret E. Fries, M.D., *Arch. Pediat.*, Nov., 1928.

PUBLIC HEALTH NURSING

MIRIAM AMES, R. N.

Another School of Nursing is Endowed—The endowment of $1,000,000 from the Rockefeller Foundation to the Yale University School of Nursing was announced in January, 1929.

The gift signified the success of an experiment carried on for 5 years to determine whether an educational program for nurses could be made comparable to that offered by medicine, law and engineering. Substantial financial backing assures the stability and continuation of this advancement in nursing education. (Of 116 students now enrolled, over one-half are college graduates.)

Outstanding features of the plan which has been endorsed by the Rockefeller Foundation are high admission requirements, emphasis on the study of fundamentals, and practical experience.

The Yale School of Nursing was founded in 1923 for the purpose of offering better educational opportunities for nurses, rather than increasing the number of graduates. Two years of college were required for entrance and the course included 28 months of practical and theoretical work under the direction of the New Haven Hospital.

A New Director for the National Organization for Public Health Nursing—The National Organization for Public Health Nursing has announced the appointment of Katharine Tucker, R.N., as General Director, March 1. Miss Tucker has been a moving spirit in public health nursing activities and has recently been the Director of the Visiting Nurse Society of Philadelphia.

Knowing as she does both the national and local aspects of public health nursing, Miss Tucker is uniquely fitted for the position. For several years she has served as a member of the Board of Directors and has also done field consultant work in surveying Visiting Nurse Associations.

What Every Nurse Should Know about the I. C. N.—Shall we see you in Montreal next July? The International Council of Nurses meets there from July 8 to July 13 for the first quadrennial convention since the one held in Helsingfors, Finland, in 1925.

Each American visitor or delegate to Montreal should have at her finger tips the history of this world-wide organization; otherwise, she will be confronted by enthusiastic delegates from foreign countries, for whom this is an open book, while for her it is still largely a matter of haphazard conjecture.

An article in the January issue of the *American Journal of Nursing* by the President of the International Council of Nurses, Nina D. Gage, R.N., contains this valuable information.

The International Council of Nurses was organized in London, England, July 2, 1899, and nurses from six different countries were listed as Foundation Members. The idea of forming international affiliations germinated at the time of the World's Fair in Chicago, 1893. At the same time a permanent organization for nurses, later known as the League of Nursing Education, was established in the United States. The objects of the International Council of Nurses are:

1. The advancement of the nursing profession by unity, thought, sympathy and purpose, in an attempt to improve the nursing care of the sick; to promote the health of the nations and to secure the honor and interest of the profession.

2. Self-government by the nurses in their associations, with the aim of raising the standards of education, professional ethics and public usefulness to their members.

3. The development of "the human being and citizen in every nurse," thus enabling her to bring her skill and professional knowledge to the many-sided service that modern society demands of her.

4. Provision for a means of communication and conference between nurses of various nationalities, and facilities for the interchange of international hospitality.

Admission to membership ever since 1904 has been through national organizations. Since then many countries have been admitted to affiliations, so that in 1928, 31 countries were represented.

All dues have been assessed on a basis proportional to the size of the constituent organization. Each individual member of the organization is taxed 5 cents in United States currency, as of January 1, each year; thus, if an association has 1,000 members, it pays $50.00 each year. The affiliated members represent more than 95,000 nurses.

Business is carried on by conference and correspondence between the headquarters in Geneva and various organizations. Conventions are held quadrennially, the program meetings of which are open to everyone. Each affiliated member association may send 4 duly accredited delegates, besides its president, to form with the officers and honorary officers the Grand Council, the voting body. American nurses are familiar with this kind of organization, as it corresponds to the House of Delegates of the American Nurses Association. The forming of friendships is a most important part of the convention.

The work of the International Council of Nurses is to draw together nursing councils from different nations; to disseminate among them professional information useful to all; to raise the standards of nursing education throughout the world; to offer assistance and advice to nurses; to arrange for subsequent meetings for the general consideration of important nursing matters and for the deliberation of questions of common interest and importance to nurses in every country.

There are committees on membership, program, arrangements, nominations, publications, revision, finance and nursing education. Many of us remember receiving with pleasure copies of a multigraphed bulletin, which Miss Reimann, Secretary of the Council, made so valuable. The popularity of that bulletin led to the indispensable magazine which has been issued quarterly since 1926.

Since 1925, Geneva, Switzerland, has been the headquarters of the International Council of Nurses (14 Quai des Eaux Vives). There, a nucleus of a small, but valuable, library is located. It is hoped that this will grow steadily and in the future become the center for research and study.

The progress and development of the International Council of Nurses (the first professional and scientific organization to become international) has been due to the vision and leadership of some of our ablest nurses. Mrs. Bedford Fenwick of England, the founder, has watched over the council from the beginning; Miss Breay was the faithful treasurer for 23 years; Miss L. Dock was the secretary for 23 years. Sister Agnes Karll exerted wide influence, not only in Germany, but throughout the world. Miss Nutting, as second chairman of the Education Committee, contributed the inspiration which has helped to raise the standards of education in many countries. Anna Maxwell of New York and Miss McMillan of Chicago have given valuable help and counsel. Baroness Sophie Mannerheim,

of Finland, served as president with a singleness of purpose that characterized everything she did. Miss Goodrich, Miss Noyes, Sister Bergliot Larssen and Christiane Reimann, the present capable, clear thinking, cosmopolitan secretary, are other leaders whom we have to thank for maintaining a truly international group and for piloting the organization through to safe waters.—The International Council of Nurses, *Am. J. Nurs.*, 29: 1 (Jan.), 1929.

Effect of the Grading Committee Report on Schools of Nursing—To quote Miss Hall, "I doubt very much if the first report from the Committee on the Grading of Nursing Schools has yet had any tangible effect upon the nursing schools in the country."

The report of the Grading Committee on Schools of Nursing given at Louisville indicated 4 almost overwhelming tasks for the nursing profession:

1. To reduce and improve the supply of nurses
2. To replace students with graduates
3. To help hospitals meet costs of graduate service
4. To get public support for nursing education

The idea of immediately reducing and improving the supply of nurses, both in small and large schools, is staggering. For a long time, the practice has been to let the nursing schools answer the needs of the hospital. Now the question of student enrollment must depend upon how many graduates may find employment and support. The problem of the training of the nurses, so vital to them, does not appear to be so important to many of the trustees of the hospital as the needs of the institution. Much educational work will have to be done before the recommendations of the committee are put into practice. Entrance requirements may be gradually raised, and this will improve the quality of the graduates.

"It is about as easy to put into practice the implications of the report as it is to enforce prohibition." Before either can be done, each endeavor must have the support of the public at large. The nursing profession cannot alone bring about the reform in nursing education.—Carrie M. Hall, R.N., Effect of the Grading Committee Report on Schools of Nursing, *Am. J. Nurs.*, 29, 2: 129 (Feb.), 1929.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

HONORABLE MENTION

For having "Contents" (at the front) and "Index" (at the back) in Biennial Report: to Bureau of Public Health, New Mexico.

For the title "Adventuring for Health" and the cover-page of the 1909–1929 report: to Welfare Division, Metropolitan Life Insurance Company.

For refreshingly unconventional design and color scheme in health posters: to Chicago Tuberculosis Institute.

To Health Department of Pasadena, Calif.—for including an index in its annual report.

To Tuberculosis and Health Society of Detroit and Wayne County, Detroit, Mich.—for table of contents in "Three Years at the Dubois Health Center" (a 31-page report).

MOTION PICTURES

A 14-page description of the Dr. Canti picture of cancer and radium effects, with details of the picture-making technic, is supplied by American Society for the Control of Cancer, 25 West 43d St., New York, N. Y.

A supplement to *Motion Pictures of the U. S. Department of Agriculture*, Washington, lists "How to Get Rid of Rats" (1 reel), and "Food Makes a Difference" (2 reels)—the latter picturing results of proper nutrition for children of preschool age, food laboratory tests of effects of foods, etc.

Possibilities in the use of amateur movies are well worth consideration by local health agencies. An important first step would be to get acquainted with *Movie Makers*, Amateur Cinema League, 105 West 40th St., New York, N. Y. *Sample free.*

IDEAS AND DEVICES

"Let's Fill the Gaps!" is the slogan of the Southside Health District, Dr. W. A. Brumfield, director, Farmville, Va. The 9 rural counties in the district are listed at the side of the District letterhead—with the names of the sanitation officer and the county nurse, or a blank line where one or both are not on the job. Dr. Brumfield is also head of Southside Hospital, constructed under the auspices of the Commonwealth Fund. Reported by C. E. Lakeman.

It does not look like a health department communication: "the Milwaukee Health Department's birthday letter to all 3-year-old children in Milwaukee and their mothers, calling attention to early correction of physical defects and to vaccination and diphtheria immunization, as well as early dental care. The letters are mailed by the nursing division so as to reach the mothers a day before the 3-year-old's birthday anniversary. Newspapers gave liberal space to the idea and a few of them reprinted the entire letter. The mailing started January 1, 1929. The largest daily in Milwaukee ran a picture of one of the first mothers to get the letter and her little daughter. They were selected because they were 'gold coast' residents, and their names helped to boost preschool child health work along." Reported by George A. Dundon.

There are 4 pages—on the first page: a wood-engraving type of picture of 5

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

men of the period when beards were beards—the caption being "As they wore them in anti-Gillette days"—and "Looking Backward" in the lower right corner. On the inside is "Yet Going Forward," with text about printing equipment. *Free* of De Vinne-Hallenbeck Co., 80 Lafayette St., New York, N. Y. Idea adaptable to annual report, annual meeting, and promotion projects.

A blotter with one edge accurately copying 6 inches from a foot-rule was distributed by a mimeographing shop.

"Social Hygiene" is on the tab of a 3 x 5 card. Below is a brief description of the American Social Hygiene Association, 370 7th Ave., New York, N. Y. At the bottom of the card: "Slip this card into your reference file." *Free.*

Bellevue-Yorkville Health Demonstration, 325 East 38th St., New York, N. Y., makes much use of the mimeograph —with colored paper and illustrations. Samples *free.*

For next summer: a street scene in red with "From blazing city streets . . . ." followed on 5th page by a country scene in green with ". . . to the cool green country." Inside: effective text on the summer services of Associated Jewish Charities, Baltimore, Md. *Free.*

REQUESTS

"Do people make use of the health information services offered in St. Louis, New York, and other cities? What difficulties have developed in handling such services?" Please address the editor.

"Can you advise us where it would be possible to obtain some illustrated charts suitable for lectures on oral hygiene. We would like to get some in which the illustrations would be of the cartoon type as well as some of a more serious nature. If there is any material of this description now being used in South America, we would be particularly pleased to get in touch with the source." Please tell the editor what you know.

TIMELY TOPICS

The Minnesota Public Health Association, St. Paul, Minn., issues a folder on "The 'Teen' Age and Its Tuberculosis Danger." It says: "One-fourth of all deaths in the 'Teen' Age are from tuberculosis. Twice as many girls as boys are patients in the tuberculosis sanatoria of Minnesota." Also: "Tuberculosis takes two 'Teen' girls for every boy. Fads That Kill: Reducing, Jazzy Life, Scanty Clothes, Lack of Rest." The editor fears that the full force of the special appeal is lessened by charting the leading causes of death *for all ages. Copy for 2 cents.*

"After All, This Is a World for Well People," by Wallace Myer. *Magazine of Business,* Chicago, Ill., Aug., 1928. 35 cents. Quotable on vacations and outdoor life for business men.

"Stews and Frys"—oysters and what the local health department does to protect the oyster eating public. Board of Health, Racine, Wis., Nov. 17, 1928.

TITLES AND PHRASES

"Even Your Friends Won't Tell You"—Tuberculosis and Health Society, 613 Locust St., St. Louis, Mo. Readable paragraph on getting a "big front."

"Select your doctor now and see him regularly"; "Most sickness is preventable."—Metropolitan Life Insurance Company.

VOLUNTEERS

How volunteers help at a health center—told in three short articles. In *Alameda County Public Health News,* 121 East 11th St., Oakland, Calif., Nov., 1928. *Free.*

"Volunteer Varieties: Various Vocations for Volunteers in Social Work"

—a 24-page booklet of the Volunteer Service Bureau, American Red Cross, 45 Newbury St., Boston, Mass. Under "Art," "Dramatics," "Health Education," and "Office Work" are jobs for volunteers in health education-publicity. The clever pen-line drawings on every page are suggestive for printed matter or mimeographing. Enclose 4 cents for a copy.

DATES AHEAD

March 31–April 7: National Negro Health Week. Address: Health Week Committee, Tuskegee Institute, Ala.

April: Early Diagnosis Campaign. Address: any tuberculosis association.

June 26–July 5: The next special opportunity for conference on publicity methods—at National Conference of Social Work in San Francisco. Address: Social Work Publicity Council, 130 East 22d St., New York, N. Y. Address: *The Survey,* 112 East 19th St., New York, N. Y., about special train starting from New York.

During March the Junior Red Cross will emphasize a swimming program to reduce deaths from drowning.

Last month was notable for the use of Valentine Day and the distribution of valentine greetings by American Social Hygiene Association. For your 1930 tickler of plans ahead.

Health conventions ahead should provide material for local newspaper use.

HOUSE ORGANS

"A Little Journey to the Clinic" and "A Farm Cure for Drug Addicts"—in two issues of *Community Fund News,* 51 West Warren Ave., Detroit, Mich.—interesting examples of descriptive writing. *Free.*

Kansas City's Health, Health Conservation Association, 1020 McGee St., Kansas City, Mo., has sent postal cards asking: "Do you read the bulletin? If not, why not? Do you pass it along for others to read? Do you think it has any educational value in the promotion of interest in health? How do you think it could be improved?"

Not a bit like a health department publication was the strikingly successful holiday issue of *Health,* New Haven Department of Health. The statistical data for the month were printed on a separate enclosure. The last page urged: "Give Health Books"—and give a dozen cover pages in color.

Bellevue-Yorkville Health News (325 East 38th St., New York, N. Y.): an excellent example of good use of the mimeograph and colored paper—legal size, one sheet, bi-monthly, addressed to neighborhood health workers and leaders in all coöperating groups. *Free.*

A list of fellows and a list of members of the A. P. H. A. from New Jersey who attended the Chicago convention were published in *Public Health News,* New Jersey Dept. of Health.

A brief sketch of a new school nurse in Indiana, in *Echoes* of Division of Public Health Nursing, mentions that the placement was made by Joint Vocational Service—a helpful way of emphasizing that service.

"This Month's Recommended Book—*Health and Wealth,* by Louis I. Dublin—Now at the Public Library." This was displayed in a box in the center of a page in *Health,* New Haven (Conn.) Dept. of Health.

CAMPAIGNS

Correction: The Early Diagnosis Campaign will be held during April—not in March as previously announced. Moral—but not an excuse for making the error: Put the date of campaigns (and of conventions and other coming events) on all printed mention of the same—and at some prominent place in every issue of your house organ or other periodical. We believe this will save time and avoid errors.

A campaign to reach 8,000,000 women with its message is being conducted by the American Society for the

Control of Cancer, 25 West 43d St., New York, N. Y. Leading national organizations of women are coöperating. State and local health agencies are afforded a special opportunity for approaching women's organizations in this connection since more women than men die of cancer.

"A baby hunt" was one of the forms of celebration of May Day reported by the American Child Health Association conducted in Missouri to secure the examination and registration of all children in the state.

"The Bridgeport Cancer Campaign"—description of preliminary steps, use of radio, printed matter, etc. "The total cost of the campaign, aside from the literature, was $596. Of this amount, $400 was expended for stenographic services."—*Campaign Notes*, American Society for Control of Cancer, Nov., 1928.

REPORTS

"Dividends in Don'ts" is a 12-page booklet "summary of achievements for 1928" of American Social Hygiene Association. Illustrates how a few paragraphs can tell about extensive projects. *Free.*

When you wish to prove that all public department reports are not uninteresting, refer to "Human Dividends," annual report of Commissioner of Public Welfare of Westchester Co., East View, N. Y. *Free.*

"Different persons informed," "Different persons served," and "Kind of service rendered or arranged for," are headings in the quarterly service report of the Rochester Tuberculosis and Health Association. Every item under the headings is divided between children and adults, with the total. This 8-page mimeograph report *free.*

"Publicity Did It" tells of the successful use of a report on sanitary and working conditions in candy making in New York, whereby the New York Consumers League emphasizes the "White List" over the "Black List." *Better Times*, 151 Fifth Ave., New York, N. Y., Jan. 7, 1929. 25 cents.

Now that many are struggling with annual reports it will be good to look up "Graphic Presentation of Public Health Nursing," which includes "How to Make Convincing Charts," by M. A. Burgess, *Pub. Health Nurse*, Aug., 1926. Get reprint for 10 cents from *Public Health Nurse*, 370 7th Ave., New York, N. Y. Applies to other fields than nursing.

TELLING TITLES

"Eye Aches and Eye Fakes"—*Hygeia*, Dec., 1928.

"Masked Riders Menace" ("the battalions of disease")—press release of New Jersey Tuberculosis League, 21 Walnut St., Newark, N. J.

"Silent Death" (carbon monoxide)—press release of Board of Health, Racine, Wis., Dec. 1, 1928.

REGRETTABLE BUT TRUE

That a Christmas seal order form, issued in a large city, had all of its more than 80 words in capitals or small caps—and three lines in 6-point type in red! Larger type is needed for legibility's sake when red ink is used—and all capitals are necessarily less readable than lower case.

That educational material of a high order of interest and value should appear, month after month, in a health department house organ set in 6-point type *and* in lines nearly 4 inches long! Happily it is not so bad as it could be—the lines are separated by leads.

EDUCATIONAL MATERIAL

"A Guide to Balanced Meal Planning," National Dairy Council, 307 North Michigan Ave., Chicago, Ill. Sample *free.* A 9" x 7" card, punched for hanging. One side: classified lists

—include daily at least one from each column, with diet for 3- to 7-year old child. Other side: daily menu suggestions, with foods for adults only, and foods for 3- to 7-year old children.

"Buying Health," *Saturday Evening Post* editorial reprinted in neat 4-page folder. Emphasizes "county full-time health unit." *Free.* State Charities Aid Association, 105 East 22d St., New York, N. Y.

PRINTED MATTER

If you are about to change your street address, a bright idea may result from seeing the recent announcement of the Children's Welfare Federation, 244 Madison Ave., New York, N. Y., that "We Are Moving Uptown."

"The Sign on Your House" is the cover page title of a 4-page folder. It is a happily phrased explanation of the meaning and importance of quarantine. By all means get a copy from Board of Health, Racine, Wis.

"Your Friend the Doctor"—a 4-page folder explaining "when you need a doctor," the kind of doctor to beware of, and "how to choose your doctor." Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y.

The Tennessee Tuberculosis Association wished to submit a collection of solid facts to its committees and helpers throughout the state. Under the heading, "Facts in Regard to Tuberculosis in Tennessee," the copy was printed on the Association letter-head (bearing a Christmas seal) and two attached blank sheets. The copy was set in two columns to the page. The form made the material about as readable as is possible. Cost, 1½ cents a copy—sample *free.* Mailed in No. 10 envelopes this memorandum form seems more effective than would have been an unillustrated booklet with enough pages small enough for envelope enclosure. The editor would like to see more experiments with the memorandum form for presenting facts and arguments to select groups.

Several attractively planned and well-printed folders come from the Illinois Society for the Prevention of Blindness, 203 North Wabash Ave., Chicago, Ill. In one the "Suppose Nobody Cared" theme is applied to the current activities of the society. But we do wonder if they tried to adapt their illustrations to dull finished paper before accepting such shiny paper stock. A blotter has good text and is well laid out—but it will blot only on one side. The Christmas appeal letter gains in white space by having the lists of names and other letterhead detail on the lower third of the back of the letterhead. The sheet being folded twice for a No. 10 envelope, this letterhead information faces the recipient as he unfolds the letter. (It takes so many words to state a very simple fact.)

LEAGUE OF NATIONS NEWS

C.-E. A. WINSLOW, Dr. P. H.

THE Second International Conference on sleeping sickness convoked by the Council of the League of Nations was held in Paris, November 5–7. It considered the report of the League of Nations International Sleeping Sickness Commission and suggested a system of administrative control of trypanosomiasis based on enumeration of native population in infected areas, adoption of an identity book or card for each native containing particulars as to health which would serve as a medical passport, establishment of boundaries at which medical authorization should be obligatory for passage, the establishment of observation posts for medical examination and, in extreme cases, the evacuation of heavily infected zones and the transportation of the population to a more favorable location. An exhaustive program of desirable research was laid down, dealing with natural immunity, spontaneous cure, and acquired immunity in man, with natural reservoirs of trypanosome infection with the relation between the different species of trypanosomes, the progress of infectivity during the cycle of transmission, and the value of various therapeutic agents. It was recommended that the health organization of the League of Nations should appoint a small expert committee to coördinate work done by various laboratories along these lines. The recommendations of the conference were approved at the 53d Session of the Council of the League at Lugano, December 11.

At this same session of the Council of the League, there was approved the program of the Health Committee for coöperation with Latin American countries involving the technical work of a specially organized leprosy commission and the continuation of inquiries at present being made in regard to infant mortality in Argentina, Brazil, Chile, Uruguay and other Latin American countries.

At a later session of the Council, the request of the Greek Government for the aid of the Health Committee in the reorganization of public health work in Greece was considered and cordially approved. Haven Emerson, M.D., has been asked to serve as a member of the special committee which will be sent to Greece to study the local problems and to aid in the development of the new program.

BOOKS AND REPORTS

Whither **Mankind.** *A Panorama of Modern Civilization. Edited by Charles A. Beard. New York: Longmans, Green,* 1928. 408 pp. Price, $3.00.

Readers of this *Journal* may be interested, even excited, mildly, to learn that the destination of mankind has finally been decided. Although the somewhat confused modern era is distinctly a machine age, subservient to science, it seems that we are, nevertheless, more spiritual, and that we are headed toward a period when collectivism and coöperation will supersede individualism, without, however, destroying independence and creative efforts.

Such is the trend of civilization, according to Professor Beard, who concludes this symposium on the destination of mankind with a sesquipedalian epilogue in which, using words seemingly averaging not less than six syllables, he informs us of the goal toward which he believes the other seventeen eminent contributors have headed us.

These celebrities, garnered from all over the world, discuss in an interesting if erudite manner the progress and ultimate position of such matters as Science, Business, Labor, Law and Government, War and Peace, Health, the Family, Race, Religion, the Arts, Philosophy, Play, Education, and Literature. Perhaps the most entertaining of the essays is that by Hendrik Willem van Loon on Ancient and Medieval Civilizations. There are several competitors for the one which is the least interesting.

Of special significance is the chapter on Health by Professor C.-E. A. Winslow, in which he explains brilliantly how the successful efforts of the sanitarian to prolong life and prevent disease have contributed to human progress, not by producing a race of weaklings but by accomplishing a gain in human quality as well as quantity. Another interesting chapter is that on Race and Civilization by George A. Dorsey, not because of the actual value of its substance, which is questionable, but because of the delightfully belligerent attitude with which he attempts to dispose of the so-called Nordic myth.

This book, written by a galaxy of eminent philosophers and savants, all of whom have had much literary experience, is a liberal education. Anyone who wishes to stimulate his mind with the most advanced thought on the most important integral features of modern civilization would do well to add this scholastic treatise to his reading list. It is, incidentally, well printed, and contains a number of rather bizarre illustrations.

JAMES A. TOBEY

Some Problems of Longevity—*By Frederick L. Hoffman, LL.D. New York: The Spectator Co., 1928.* 190 pp. Price, $6.00.

The question of longevity is always interesting. Most people are afraid to die, and as drowning persons will grasp at a straw, so they reach for anything which holds out even the remotest promise of prolonging life on earth.

Dr. Hoffman, whose high standing as a statistician is international, has given us an interesting book made up of thirty-five short chapters. Most of these give statistics regarding various ailments which shorten life. The chapter on suicide, which the author confesses is an unsolved problem, is an interesting preachment. Service in the army and navy is clearly shown to be conducive to long life, though it must be remembered that those entering are

carefully selected individuals. The suicide rate of army officers is astonishing.

The chief criticism that can be made of the book is that apparently some time elapsed between the preparation of the manuscript and its publication, since many of the figures given are not up to date. In the discussion of cancer, on which the author has already given us a most notable volume, he has unfortunately adopted theories for which there seems to be no ground. The statement that "white bread is so completely devitalized that it serves no genuine food requirement whatever" is wrong on the face of it, since the caloric value of such bread is high. In this idea, as well as the further conclusion that its use results in obscure bodily ills, which in turn may lead to precancerous conditions, the author is under the influence of Sir Arbuthnot Lane, which is further reflected in his advice concerning prevention.

In the discussion of leprosy, no mention is made of the great improvements in the administration of chaulmoogra oil due to the isolation of the ethyl esters by McDonald and Dean, nor of the number of patients being discharged as cured or arrested cases from the Carville leprosarium.

There is nothing in the make-up of the book which seems to warrant the price of $6.00. The print is small, but the paper is light and has a mat surface. There are no illustrations.

M. P. RAVENEL

The Basis of Breeding—*By Leon F. Whitney. New Haven: E. C. Fowler, 1928.* viii + 260 pp., 101 figs. Price, $3.00.

This is a book by a practical breeder of dogs who has a familiarity with the biological principles of the hereditary mechanism and with the structure and physiology of the reproductive system. It is written from the standpoint of the layman rather than the specialist. Though not free from technicalities, these have been reduced as far as feasible in the interests of simplicity of presentation. The text is divided into two parts, the first dealing with the hereditary basis of breeding and the second with the physiological basis. In the first part one finds chapters on such subjects as what does blood tell, the cause of sex, Mendelism, selection, pure lines, unmasking defects, inbreeding, prepotency, and breed improvement. In the second they deal with the reproductive systems, the mating cycle in man and domestic animals, birth, and sterility. There is a closing chapter with a long list of questions raised by the discussions, with references to the pages where appropriate answers will be found. The index also is very complete.

The book is very readable, full of interesting facts and much that is new regarding the breeding of dogs. It is a fresh and interesting treatment of a much discussed subject and a welcome and distinct addition to the literature of breeding.

Public health laboratories which rear their own animals will find it a valuable aid, since it deals not only with dogs, but also with rabbits, mice and guinea pigs.

C. A. KOFOID

Your Heart and You—*By Robert William Langley, M.D. Los Angeles: Wetzel Publishing Co., 1928.* 59 pp. Price, $1.50.

This short book, intended chiefly for those who believe themselves to be the victims of heart disease, covers the ground in a satisfactory manner. The causative relationship of rheumatic fever to heart disease is recognized, but is not sufficiently stressed, and is entirely omitted from chapter XII, "Facts about Heart Disease," in which it could well find a place.

The printing, paper and illustrations are good.

M. P. RAVENEL

Transactions of the Fifth Annual Meeting of the American Child Health Association—*New York: American Child Health Association,* 1928. 333 pp. Price, $3.00.

The transactions contain the papers read at the joint sessions of the Child Hygiene Section of the American Public Health Association and the American Child Health Association, when these two organizations met in Chicago, October 1928, for the Fifty-seventh Annual Meeting of the former association and the Fifth Annual Meeting of the latter. Papers read before the technical sessions of the American Child Health Association are also included. The most recent conclusions of authorities on maternal mortality, school health education, infancy and preschool problems, school medical and nursing service, dental health education, and objective standards in health education are presented in this volume.

Employment of the Tuberculous—*By Alice Campbell Klein and Grant Thorburn, M.D. New York: New York Tuberculosis and Health Association.* Price, $.50.

A 3-year experiment in "medically supervised employment for patients recovering from tuberculosis," conducted by the New York Tuberculosis and Health Association, is summarized in a book just published by the association. The study concludes that "there are no industries in which *all* jobs are suitable for the tuberculous, and on the other hand there are only a few industries which have *no* jobs suitable for the tuberculous."

Another conclusion derived from the experience with more than 900 former tuberculosis patients is that it is not feasible to list trades and jobs which are suitable for the tuberculous, but rather to list the factors to be avoided, and those to be sought, in selecting work for such persons.

The book contains a detailed report of this, the only such experiment thus far conducted under the intense, active and natural conditions of work in offices, stores and factories in New York City. The expenses of the experiment were borne jointly by the New York Tuberculosis and Health Association and the Laura Spelman Rockefeller Memorial. Copies are being distributed by the National Tuberculosis Association, 370 Seventh Avenue, New York, N. Y., at 50 cents a copy. There are 1,150 books ready for distribution.

How to Enjoy Health—*Counsels and Maxims for the Healthy Life—By Claude Lillingston, M.D., and Norah Hill, A.R.R.C. With Preface by Sir Squire Sprigge, M.D. London: Hodder and Stoughton,* 1928. 287 pp. Price, $1.00.

This little book is the conjoint work of the well known editor of *The World's Health* and his assistant editor, one a physician and the other not.

The authors state in their preface that they have checked each other's work, Miss Hill having prevented the too great use of technical language and "scientific jargon," and Dr. Lillingston having verified the facts collected by Miss Hill.

There are thirty-seven essays, all of them articles originally published in Red Cross journals, many of which have been translated into several languages. The three characteristics of the book which impress one are accuracy, common sense and humor. It is something of a relief to get away from the cut and dried formula which most books on health follow. The history of the essays already given shows that the book is intended for the public. None the less, physicians and public health workers can read it with pleasure and profit.

The printing is exceptionally good, and the binding, though light, seems adequate for a book of its size.

M. P. RAVENEL

The Home Dietitian—*By Ella Mae Ives (3d ed.)—Philadelphia: David McKay Co.*, 1928. 710 pp. Price, $2.50.

The book is primarily a volume of recipes for all occasions, offering variety and tempting experimentation. However, the title of the book is justified by a few scientific introductory pages to sections written by authorities on diet for adults and children, food classifications and food quantities.

Harvard Health Talks, 9. Pneumonia—*By Frederick Taylor Lord, M.D. (rev. ed.). Cambridge: Harvard University Press, 1929.* 142 pp. Price, $1.00.

Since the first edition, which appeared in 1922, notable advances have been made in the study of pneumonia, particularly in regard to the types of the causative organism and the specific treatment by serum, its uses and its limitations. The refining and concentration methods of Felton are considered.

Written, as it is, by a well-known authority, this new edition is welcome.

M. P. RAVENEL

On the State of the Public Health. *Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1927—London: His Majesty's Stationery Office*, 1928. Price, 2 s. 6 d.

The annual reports of Sir George Newman are in a class by themselves. We look forward to them with eagerness. The present volume strikes us as being even better than its predecessors. Though the material applies particularly to England, the fundamentals are applicable to every part of the world—indeed, there is a section devoted to international health, and there are other chapters on epidemiology, foods and the laws concerning the importation of foods, which are directly international in their character.

While it is hard to select chapters for special mention, we believe those on tuberculosis and the relation of food to health and disease are of particular value. The whole report is written in the clear and convincing style characteristic of the author.

M. P. RAVENEL

Proceedings of the National Conference of Social Work—*Chicago: University of Chicago Press*, 1928. 670 pp. Price, $3.00.

The proceedings of the fifty-fifth annual meeting of social workers held in Memphis, Tenn., May 2–9, 1928, contain an interesting section in health, the papers of this section having been contributed by national figures in the health and social work field. The proceedings are divided into sections dealing with children, delinquents and correction, the family, industrial and economic problems, neighborhood and community life, mental hygiene, organization of social forces, public officials and administration, the immigrant, professional standards and education and educational publicity.

Topical Sources for Personal Hygiene Applied—*By Jesse Feiring Williams, M.D. Philadelphia: Saunders, 1929.* Price, $1.00.

The books on hygiene by Dr. Williams have attained a position which is their just due. This source book, which refers particularly to "Personal Hygiene Applied," will aid teachers in formulating courses and in designating literature for term reports.

The book is well put together, and can be recommended to those engaged in the teaching of hygiene and public health.

M. P. RAVENEL

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Anderson County, S. C.—The 1928 report of this county health unit, which serves 80,000 people, indicates that an antidiphtheria campaign reached 3,500 children, while 6,961 typhoid inoculations were given. About 90 per cent of the school population have been vaccinated.

Interest was stimulated in the examination of children of preschool age, and summer round-ups were conducted in four schools. Special written instruction in proper diet and in needed corrections were given the mothers, and each child was given a milk bottle weight tag.

Child health conferences are held, midwives are encouraged to send their patients to prenatal clinics, and classes of instruction are conducted for midwives. Considerable work has been done in health education, through the schools, the press, the county fair and exhibits, including the distribution of nearly 25,000 pieces of health literature.

Kentucky—The December bulletin of the State Board of Health contains an analysis of vital statistics for the state for 1927, including death rate tables for 5 years and birth rate tables for 2 years. A general death rate of 10.8 for 1927 (9.8 for white and 19.8 for colored persons) is recorded. An infant mortality rate of 62.3 in 1927 compares with a rate of 74.5 in 1926. Deaths of children between the ages of 1 to 5 years declined from 2,280 in 1926 to 1,614 in 1927. A birth rate of 24.1 for 1927 is noted. This is an interesting and comprehensive statistical report.

New Hampshire Tuberculosis Association—During 1927, there is reported a tuberculosis rate of 63 per 100,000 population—the lowest recorded for the state. This compares with an average annual rate of 118 in the decade preceding 1917, 89 in 1922 and 66 in 1925. It is gratifying to note that the clinics are gradually dealing with lessening numbers of far advanced cases. "The state-wide clinic, nursing and educational campaigns, the increasing coöperation of the medical profession and the public at large, are resulting in the early discovery of easily curable cases. From our clinic experience we know that the great majority of these cases do not develop into advanced cases, but under prompt treatment are cured."

Among the encouraging factors listed are the steady downward trend in the death rates and in the number of advanced cases, the increases in the number of arrested and cured cases, the widespread interest and sympathy of the people, and the complete state-wide organization of clinic and nursing service. One of the important discouraging factors is the occurrence of acutely active cases of tuberculosis in young people between 15 and 20 years of age, particularly among young women. "That this is due at least in part to under-nutrition is quite evident in some cases."

Connecticut—Another year without marked epidemics, except measles, is noted, and the coöperation shown by the physicians of the state is considered a major factor in control work. By means of leaflets, posters, illustrated lectures, moving pictures and exhibits, the department has endeavored to disseminate information on the promotion of health and prevention of disease. Among the exhibits were those at the State Fair and at the Sesquicentennial Exposition at Philadelphia. Attendance

at film showings numbered 109,062 in 267 places. There were 246 health talks given, with an attendance of 26,159. Including these activities, posters and exhibits, exclusive of leaflets, it is calculated that 212,900 persons were directly reached by the health education service.

The state reports for 1926 a birth rate of 18, a marriage rate of 7.7 and a death rate of 11.4, with a rate from puerperal diseases of 6.4. A special study has been carried out during the past 3 years of 370 diphtheria deaths in the state, or 85 per cent of the total deaths from this cause. During this time, 27.9 per cent of the diphtheria cases were under 5 years of age, but 53.2 per cent of the deaths were in this age group. In 39 per cent of the deaths the doctor was not called until the 4th day or later. None of these fatal cases had been immunized against diphtheria by toxin-antitoxin.

The report indicates that few public health activities have such an appeal as child hygiene.

Three out of every 100 babies born each year are now living who, ten years ago, would have been dead. If these were valued at $1,000 apiece, the profit for the year to health workers in the state may well be termed 866 × $1,000, or $866,000. A rather appreciable dividend to the onlooking world, not to mention the value of this saving to mothers and fathers.

The legislature has recognized the need for public health nursing in the state and passed a bill providing for state aid for these towns so that all towns having average receipts of not over $50,000 for the three fiscal years preceding are now eligible to ask the department for state aid.

What is the dividend in health for 1926? Applying the methods of calculation promulgated by the National Conservation Commission as was first shown in the 1921 and 1922 reports of this department, Connecticut saved $2,734,600 in preventing deaths of persons in the state who would have died if the disease death rates for the average of the years 1915–1919 prevailed today. . . . It would therefore appear certainly safe to say that the savings effected from lessened deaths and lessened cases of disease is at least twice the savings due to lessened mortality. From this it will appear that in the last 5 years there has been a total saving to the state of at least 28 million dollars.—
State Dept. of Health, 42d report for the year ending June 30, 1927.

Kansas—The 14th biennial report of the Kansas State Board of Health, for the period ending July 1, 1928, contains 252 pages of text, statistical and graphic material, including a table of contents at the front and an alphabetical index at the back. This is one of the best state reports of the year from the standpoint of arrangement, use of space and special features. One of the most creditable features is the statistical graphs and charts which have been carefully made and convey a message of progress in results of health work. Another attractive feature is the health posters reproduced from the drawings of high school pupils who engaged in a contest sponsored by the department in 1927 and 1928. The posters were judged by a committee composed of health officers and art editors.

An effective chart shows that about 75 per cent of the infectious disease reports are received during the first 6 months of the year, the season when acute respiratory infections are most prevalent, the highest percentage occurring in March, measles, chicken pox, and scarlet fever being most prevalent. The board of health has adopted the slogan "Diphtheria Must Go," and has instituted an intensive program. According to the Board of Agriculture, there were in 1927, 548,409 persons in the state under 20 years of age. Reported immunizations against diphtheria include 18.8 per cent of this number. Infant mortality has decreased from 87 in 1913 and 75 in 1914, to 54 in 1927.

A school for health officers and public health nurses was held in April, in

1927, and in 1928. These schools were made possible through the coöperation of the U. S. Public Health Service and the Rockefeller Foundation. In addition to the public health group, a number of physicians in private practice attended the majority of the sessions.

United Fruit Company—Abounding in attractive photographs of company hospitals in Costa Rica, Panama, Guatemala, Colombia and Cuba, followed by scientific papers, this 1927 report of 368 pages is worthy of study. Considerable progress is reported in the control of malaria, which is considered a major problem, as about 90 per cent of the sickness in camps was due to this disease. Efforts to destroy mosquito breeding places by filling, draining, and the use of Paris green and oil; treatment measures by the use of quinine; and attempts to destroy mosquitoes by insecticide sprays and other means are described.

Considerable space is given to discussions of different methods of use and dosages of the new drug "plasmochin." The drug is particularly effective in cleaning the peripheral blood of gametocytes, which are the adult sexual forms of malarial parasites that infect mosquitoes. Unfortunately, it occasionally produces toxic symptoms when given in large doses over a prolonged period. The report indicates confidence that its use can be extended to the treatment of camp cases in such doses as to be effective without causing serious results. A reduction of 28 per cent in the number of malaria cases treated in hospitals over the number of the previous year (11,141 cases) is noteworthy.

U. S. Children's Bureau—An enlightening report of 150 pages on the promotion of the welfare and hygiene of maternity and infancy has been prepared for the year ended June 30, 1927. Infant mortality rates for 1927 were lower than for 1926 in 30 of the 33 states for which figures for both years are available. At the close of the fiscal year all the states except three were cooperating under the provisions of the Sheppard-Towner Act, the exceptions being Massachusetts, Connecticut and Illinois. The appropriation under this act has been authorized for the fiscal years 1928 and 1929, and the original act ceases simultaneously with the appropriation on June 30, 1929.

The types of work undertaken in the states under the maternity and infancy act are quite uniformly educational. The personnel of the bureau or division administering the act is determined by the needs of the state and the size of its budget. Physicians, nurses, dentists or dental hygienists and clerks make up the major part of the personnel. Including state directors, 140 physicians on the state staffs gave full-time service. Additional physicians were employed to conduct child health or prenatal conferences and to do special work. For example, it is reported that New York State paid 209 physicians for occasional service.

Public health nurses were on the staff of every state bureau or division, approximately 770 nurses being employed during the year. In 43 states and the Territory of Hawaii, 200,223 infants and preschool children were examined by physicians, or advice as to their care was given by physicians or nurses, and in 34 states 27,377 women were given prenatal advice by physicians or nurses. Dental conferences were reported in 15 states to the number of 1,124, where 27,870 preschool children received advice on the care of their teeth, in addition to 1,664 expectant mothers.

Milbank Memorial Fund—The Milbank Memorial Fund report for the year ending December 31, 1927, is divided into three parts. Part one presents a 5-year review of the results ac-

complished in Cattaraugus County and in Syracuse, a summary of the 1927 grants, and an outline of the studies of the New York Commission on Ventilation. The infant mortality rate in Cattaraugus County has declined about 19 per 1,000 births in 5 years, and decreases are also shown in the age periods from 1 to 35. The mortality reductions have been chiefly in the communicable, respiratory, and digestive diseases, and in diseases of the nervous system. The annual death rate from tuberculosis has steadily declined, especially in the younger age groups. Likewise, in Syracuse, decreases in death rates are most pronounced among the younger ages, especially in regard to the communicable and digestive diseases. Tuberculosis, infant mortality, and diarrhea and enteritis among children under 2 years of age exhibited marked reductions.

The Milbank Memorial Fund appropriated $193,000 in 1927 aside from the $325,000 set aside for the New York Health Demonstrations. Among the enterprises to which grants have been made are the Committee on Cost of Medical Care, the International Conference of Social Work, the National Board of Medical Examiners, New York Association for Improving the Condition of the Poor, and the Judson Health Center. The studies on ventilation set up in 1926 in selected schools in Syracuse and Cattaraugus County were carried forward under the New York Commission on Ventilation. In Syracuse conditions were compared in modern steam heated, mechanically ventilated school buildings with those in old naturally ventilated buildings, with results indicating an advantage in the latter. One-room and two-room rural schools in Cattaraugus County were studied in connection with construction, heating equipment and air conditions in the classrooms.

Part two outlines the Rural Health Demonstration in Cattaraugus County, the Urban Health Demonstration in Syracuse, and the Metropolitan Health Demonstration in the Bellevue-Yorkville District in the city of New York. The year 1927 was the first full year of service on the part of the health center under development by the Bellevue-Yorkville Health Demonstration. However, 49,000 visits were made to the health center by residents of the districts, and 60,000 visits were made to persons living in the district. The following activities are carried on: a baby health station, chest clinics for adults and children, a preschool clinic, a venereal disease clinic for adults, a vaginitis clinic for young girls, a dental clinic, a weekly Mothers' Club, nutrition classes for boys and girls in connection with the chest clinic, and lessons in home hygiene and care of the sick. A study of the tuberculosis nursing service in the area, a survey of prenatal, infant and preschool health activities, and a survey of the nutrition needs of the district have been accomplished during the year, in addition to studies based on the records of medical inspections of 1,445 third grade school children in 1925–1926. Data have also been prepared and a report distributed as a basis for an accident prevention campaign.

Part three of the report is a financial statement of the Milbank Memorial Fund with a list of grants. The report as a whole consists of 109 pages and is well prepared, with an abundance of half-tones, charts and tables. An addendum gives the supervisory and operating organizations and personnel of the three New York Health Demonstrations.

Seattle, Wash.—The 1927 report of the Department of Health and Sanitation of Seattle is a well formed volume of 97 pages, with a good index. Seattle has a total land area of 58.56 sq. mi. and a water area of 35.91 sq. mi. The estimated population for 1927 was 375,300. The crude death rate was

9.51, a decrease of 0.82 over that for 1926, while the infant mortality rate for children under 1 year was 41, the lowest ever recorded in the history of the city. The tuberculosis death rate was 53.5, or 10.2 less than for 1926.

The program of the Child Welfare Division has been broadened along lines designed to reduce the incidence of preventable sickness and deaths among mothers and infants. Medical supervision has been placed under the management of the Seattle Pediatric Society in order that physicians highly trained in the requirements of child life might be brought in attendance at the clinics, a move which led to highly favorable results. Seven child welfare clinics are conducted at strategic points in the city, with an attendance of 5,569; and 11,174 visits were made during the year by child welfare nurses, 875 of which were first visits.

Six hundred and forty-eight cases of tuberculosis were under the observation of visiting nurses at the close of 1927. The visits during the year numbered 5,827, while 3,244 cases attended the tuberculosis clinics. The city's sanatorium, Firlands, averaged 202 cases in 1927. In addition to the care and treatment of patients, the policy at Firlands includes the training of the nursing staff so that better equipped nurses may be sent out into this field. A strong plea is made to remove positions at the sanatorium from the civil service list in order that employment may be given to those patients and ex-patients who are able to use it.

BOOKS RECEIVED

DAIRY BACTERIOLOGY. By B. W. Hammer. New York: Wiley, 1928. 473 pp. Price, $5.00.

THE CONSUMER LOOKS AT ADVERTISING. By Paul T. Cherington. New York: Harper, 1928. 196 pp. Price, $2.50.

CORRECTIVE PHYSICAL EDUCATION FOR GROUPS. By Charles L. Lowman, Claire Colestock and Hazel Cooper. New York: Barnes, 1928. 521 pp. Price, $4.50.

PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION. By George T. Stafford. New York: Barnes, 1928. 328 pp. Price, $3.00.

PNEUMONIA (rev. ed.). By Frederick Taylor Lord. Cambridge: Harvard University Press, 1929. 84 pp. Price, $1.00.

HOWS AND WHYS OF HUMAN BEHAVIOR. By George A. Dorsey. New York: Harper, 1928. 298 pp. Price, $3.50.

READINGS IN PUBLIC OPINION. ITS FORMATION AND CONTROL. Edited by W. Brooke Graves. New York: Appleton, 1928. 1281 pp. Price, $6.00.

PRINCIPLES OF SOCIOLOGY. By Rudolph M. Binder. New York: Prentice-Hall, 1928. 609 pp. Price, $5.00.

SAFETY AND PRODUCTION. REPORT BY AMERICAN ENGINEERING COUNCIL. New York: Harper, 1928. 414 pp. Price, $5.00.

PSYCHOLOGY FOR EXECUTIVES. A STUDY OF HUMAN NATURE IN INDUSTRY. By Elliott Dunlap Smith. New York: Harper, 1928. 262 pp. Price, $3.50.

THE FACTS AGAINST COMPULSORY VACCINATION. By H. B. Anderson. New York: Citizens Medical Reference Bureau, 1929. 127 pp. Price, $1.00.

YOUR HEART AND YOU. By Robert W. Langley. Los Angeles: Wetzel Pub. Co., 1928. 59 pp. Price, $1.50.

SOME PROBLEMS OF LONGEVITY. By Frederick L. Hoffman. New York: Spectator Co., 1928. 180 pp. Price, $6.00.

PROCEEDINGS OF SIXTH ANNUAL SHORT SCHOOL TEXAS ASSOCIATION OF SANITARIANS. Austin: Texas Association of Sanitarians, 1928. 188 pp. Price, $1.00.

MOTHER AND CHILD. ADVICE TO THE YOUNG WIFE AND MOTHER OF TO-DAY. By Mary Lyon. New York: Macmillan, 1928. 215 pp. Price, $2.00.

THE BALANCE OF BIRTHS AND DEATHS. VOLUME I. Western and Northern Europe. By Robert R. Kuczynski. New York: Macmillan, 1928. 140 pp. Price, $2.00.

THE STORY OF MODERN PREVENTIVE MEDICINE. By Sir Arthur Newsholme. Baltimore: Williams & Wilkins, 1929. 295 pp. Price, $4.00.

A DOCTOR'S LETTERS TO EXPECTANT PARENTS. By Frank Howard Richardson. New York: Norton, 1929. 118 pp. Price, $1.75.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Industrial Vocational Guidance—A rather rambling discussion of the placement problems and mental hygiene of the employes of one large department store.

ANDERSON, V. V. Vocational Guidance and Mental Hygiene of Industry. Canada Lancet, 72, 1: 7 (Jan.), 1929.

Rural Tuberculosis Trends—A summary of recent researches in tuberculosis rates. From 1900 to 1916 the urban rate was twice the rural rate while from 1921 to 1926 it was only half again as high. It is hoped that the Cattaraugus County demonstration will throw some light on the reasons for the difference.

ANON. The Trend of Rural and Urban Tuberculosis Mortality. Milbank Quarterly Bull., 7, 1: 1 (Jan.), 1929.

Puerperal Mortality—A general review of maternal mortality statistics and a discussion of the causes.

BLAND, P. B. Puerperal Morbidity and Mortality. M. J. & Record, 129, 2: 83 (Jan. 16), 1929.

Chlorination of Water—A general discussion of the value of treating potable waters with chlorine and the methods by which the chemical may be added to the various kinds of water supplies.

BUNKER, G. C. The Use of Chlorine in Water Purification. J. A. M. A., 92, 1: 1 (Jan. 5), 1929.

Potency of Cod Liver Oil—The potency of cod liver oil varies inversely with the amount of oil in the liver. Oils may vary a thousand times in value.

HESS, A. F., *et al.* Antirachitic Potency in Relation to Volume of Oil in the Liver of the Cod. J. A. M. A., 92, 3: 226 (Jan. 19), 1929.

Health Publicity—A description of window displays used in drug stores of the Bellevue-Yorkville district.

CANDEE, M. D. Selling Health in Drug Stores. Survey, 61, 8: 487 (Jan. 15), 1929.

Undulant Fever—Serum agglutination tests for *Br. abortus* done on 1,100 specimens of blood taken from patients not suspected of this infection gave 63 positive reactions. The incidence of this condition demands more serious consideration than it has thus far received.

GLORDANO, A. S., and ABELSON, M. *Brucella Abortus* Infection in Man. J. A. M. A., 92, 3: 198 (Jan. 19), 1929.

Oral Typhoid Vaccination—Experiments are reported in which it was found that agglutinins and complement fixing bodies were produced as readily by the oral administration as the subcutaneous injection of typhoid bacterine.

HOFFSTADT, R. E., *et al.* Immunological Studies of Typhoid Vaccination by Mouth. Am. J. Hyg., 9, 1: 1 (Jan.), 1929.

Leprosy—An account of the disposition of cases committed to the Federal leprosarium. During the last fourteen years 48 patients have been discharged, 10 to suffer a relapse and be recommitted.

HOPKINS, R., and DENNEY, O. E. Leprosy in the United States. J. A. M. A., 92, 3: 191 (Jan. 19), 1929.

Epidemic of Poliomyelitis—An analysis of the relation between severity of symptoms and distribution in the 1927 outbreak of poliomyelitis in Massachusetts.

LEGG, A. T. An Analysis of the 1927 Epidemic of Infantile Paralysis in Massachusetts. J. A. M. A., 92, 1: 31 (Jan. 5), 1929.

Cancer and Tuberculosis—A study of a carefully controlled group leads to the conclusion " that there is a definite and marked incompatibility or antagonism between the two diseases, cancer and tuberculosis, of such sort that both occur together at the same time in florid activity in the same individual, only with great rarity."

PEARL, R. Cancer and Tuberculosis. Am. J. Hyg., 1, 9: 97 (Jan.), 1929.

Rickets and Infection—Rachitic rats exposed to the sun for 2 hours daily for 4 weeks were more resistant to infection than rachitic controls, probably due to the curing of the rickets by the sun.

ROBERTSON, E. C. A Study of the Effect of Various Agents, Chiefly Sunlight, upon the Susceptibility of Rachitic Rats to Infection. Am. J. Hyg., 9, 1: 75 (Jan.), 1929.

Malnutrition and Nervousness—Studies with experimental animals and clinical observations indicate a close relationship between malnutrition and nervousness. Forced feeding and rest reduce nervous symptoms.

SCHAM, M., and SCHAM, G. The Relation between Malnutrition and Nervousness. Am. J. Dis. Child., 37, 1: 1 (Jan.), 1929.

Allergy and Scarlet Fever—The reasons the rash and acute symptoms of scarlet fever are allergic are discussed in detail. The dissimilarity of diphtheria toxin and the toxic substance of *Streptococcus scarlatinae* is considered.

STEVENS, F. A., and DOCHEZ, A. R. The Relation of Allergy to Scarlet Fever. New York State J. Med., 29, 1: 22 (Jan. 1), 1929.

Progress in Health Education—A review of the history of the health educational movement and the present status of the work by federal, state and city health departments and the voluntary health agencies. Very good.

TOBEY, J. A. The Development of Popular Health Instruction. Hosp. Soc. Serv., 19, 1: 19 (Jan.), 1929.

Tuberculosis Case Finding by Nurses—A study of a large number of patients admitted to tuberculosis sanatoriums showed that few were discovered by public health nurses. The authors urge the more general employment of health visitors and more interest in tuberculosis on the part of those employed.

WILLIAMS, L. R., and HILL, A. M. The Public Health Nurse and Tuberculosis. Pub. Health Nurse, 21, 1: 4 (Jan.), 1929.

Vitamin Values of Fats—This paper summarizes the reasons for butter shortage in England and tells of the production of margarines as rich as butter in vitamins A and D reinforced by the addition of fish liver oil.

WILLIAMS, P. N., and MACLENNAN, K. Fatty Foods in Relation to Public Health. J. State Med., 37, 1: 32 (Jan.), 1929.

Posture and Health—The effect of posture on health and efficiency and methods of posture training are discussed.

TALBOT, F. B. Posture, Health and Efficiency. Pub. Health Nurse, 21, 1: 8 (Jan.), 1929.

Anti-tuberculosis Vaccination—Intradermal vaccination with Calmette's vaccine proved efficacious in the writer's experience. The treatment seems too heroic for general acceptance.

WALLGREN, A. Intradermal Vaccinations with BCG Virus. J. A. M. A., 91, 24: 1876 (Dec. 15), 1928.

NEWS FROM THE FIELD

THE MEDICAL COLLEGE OF VIRGINIA

THE Chemical Foundation, Inc., New York, N. Y., has made a grant to the Medical College of Virginia at Richmond to provide for the employment, during a 3-year period, of a full-time expert to enlarge the present program of research in chemistry as related to medicine, surgery and dentistry. The special laboratory for this work will also be enlarged.

OFFICERS ELECTED AT ELEVENTH TEXAS WATER WORKS SHORT SCHOOL

AT the Eleventh Annual Texas Short School for water and sewer plant operators, held January 14–22, at the Agricultural and Mechanical College and at Bryan, Tex., the following officers were reëlected: *President,* J. Z. Martin, Breckenridge; *First Vice-President,* W. H. Deaton, Waco; *Second Vice-President,* Bud A. Randolph, Houston; *Third Vice-President,* L. A. Grimes, Abilene; and *Fourth Vice-President,* J. R. John, Dallas. The following officers were newly elected: *Secretary,* V. M. Ehlers, Austin; *Treasurer,* E. G. Eggert, Austin; and *Editor,* Ella G. White, Austin.

Abilene, Tex., was chosen as headquarters for the next annual meeting.

HEALTH WORKERS OF SOUTH-WESTERN OHIO

AT a meeting of the Health Commissioners of the South-Western District of Ohio, on January 23, it was voted to enlarge the association to include the public health nurses and all health workers of the district. Therefore the name of the association was changed to "Health Workers of South-Western Ohio," and the following were elected officers for the ensuing year: *President,* Dr. Edward Blair, Lebanon; *Vice-President,* Mary Ewalt, Eaton; *Secretary and Treasurer,* Dr. C. J. Baldridge, Hamilton. The next of the quarterly meetings will take place in Greenville, O., April 10.

DR. KAMM RECEIVES AWARD

DR. Oliver Kamm, director of chemical research of Parke, Davis & Company, has been awarded the $1,000 prize by the American Association for the Advancement of Science for the "most noteworthy contribution to science presented at the annual meeting," which was held in New York in January. The award was announced on January 2 and was given in recognition of Dr. Kamm's work in investigation of ductless glands and his isolation of pituitary hormones.

APPROPRIATION FOR INFLUENZA RESEARCH

MILTON J. Rosenau, M.D., Fellow A. P. H. A., of the Harvard University Medical School, has announced an appropriation of $10,000 by the Metropolitan Life Insurance Company for research on influenza and methods of its prevention. Dr. Rosenau is head of this company's influenza commission, other members of which are: Edwin O. Jordan, Ph.D., Treasurer, George W. McCoy, M.D., W. H. Frost, M.D., William H. Park, M.D., and Lee K. Frankel, Ph.D., all Fellows of the A. P. H. A.

MASSACHUSETTS GENERAL HOSPITAL PROJECT

PLANS for the new hospital for people of moderate means are now being put into operation by the Massachusetts General Hospital. The contracts

amount to nearly a million and a half dollars, and the trustees are confident of raising the full amount of the necessary funds.

YELLOW FEVER IN RIO DE JANEIRO

NOT since 1908, when there was a campaign to eradicate yellow fever, has there been an epidemic in Rio de Janeiro, until last year in May when the disease appeared again, although occasional cases occurred in the interim. From May until the beginning of October 108 cases had been reported, according to a review of the situation by Dr. Clementino Fraga, Director General of Public Health of Brazil. The case fatality rate was 55.5 per cent, 33 per cent among Brazilians and 62 per cent among foreigners.

In his report Dr. Fraga states that the disease was in all probability imported from the northern states, "the means of communication of which with the capital are all the time becoming more rapid because of the introduction of aerial navigation and because of the increased maritime intercourse carried on by new lines of fast steamers."

The incidence was much greater among men (82 per cent of cases), especially in the two age groups 15–24 and 25–34 years. Barely 10 per cent of those attacked were under 15 years of age. Foreigners were conspicuously more affected. Ninety per cent of the cases were removed to hospitals and the others were cared for at home. Isolation of reported cases and other preventive measures were applied at the beginning of the outbreak.

Extending through an area of 220 to 275 yards from known or suspected cases, supervision was established and continued for periods of not less than 30 days. At the peak of the epidemic over 175,000 persons submitted daily to medical examination at the hands of 73 physicians, 31 visiting nurses, and 100 fourth and fifth year medical students.

The supervision of mosquito breeding places made it necessary to divide the city into 27 districts, and later the districts were divided into 10 urban and 3 suburban districts. More than 1,800 men were employed to cover the city in weekly house to house visits.

Data secured at the last inspection showed a *Culex* index of 2 per cent, which gave grounds for the conclusion that the *Aedes* index is most reassuring and that yellow fever will be quickly exterminated in Rio de Janeiro.

DR. KOFOID EXPLAINS CANCER FILM

CHARLES A. Kofoid, Ph.D., Fellow A. P. H. A., Professor of Zoölogy at the University of California, assisted in the first public presentation of the Canti Cancer Film, given in San Francisco, January 22, and in Berkeley, January 29, under the auspices of the University of California. Dr. Kofoid explained the film, which traces the the growth of the normal as well as the cancer cells and describes the effect of radium upon them.

A. E. GORMAN GOES TO WALLACE & TIERNAN COMPANY

ARTHUR E. Gorman, Public Health Engineer for the Chicago Sanitary District and formerly Chief Sanitary Engineer, Department of Public Works, Chicago Health Department, has become associated with the Wallace & Tiernan Company on sales promotion work. Mr. Gorman assumed his new duties January 1 and is located at the company's headquarters in Newark, N. J.

For six and a half years Mr. Gorman was connected with the U. S. Public Health Service, as Assistant and Associate Sanitary Engineer. He is a Fellow of the A. P. H. A., and has served as chairman of the Public Health Engineering Section and also as section secretary. He was convention manager of the 57th Annual Meeting of the Association held in Chicago in 1928.

TYPHOID CARRIER IN NEW YORK DISCOVERED BY NURSE

A DISTRICT nurse of the New York City Department of Health detected a typhoid carrier dispensing coffee in a restaurant and immediately reported the case to Commissioner S. H. Wynne, M.D. The Health Commissioner stated that the discovery of George Pappas, the carrier, had undoubtedly averted an outbreak of typhoid fever on the East Side of the city. Pappas, who had been previously warned not to handle foodstuff, was arrested and sent to North Brother Island, after a bacteriological test showed that he is still a carrier.

There are 208 typhoid carriers listed on the books of the New York City Health Department, and in more than 7 years only 2 have violated their paroles. The other violator is now a prisoner on North Brother Island also.

CUYAHOGA FALLS HONORED FOR CLEANLINESS

CUYAHOGA FALLS, O., has been awarded the honor for being the "cleanest city in Ohio" by the General Federation of Women's Clubs of the United States in a contest for conducting the best and most efficient clean-up campaign.

DENVER APPRAISES ITS HEALTH WORK

AT a dinner to which all persons interested in the progress of their community were invited, the Denver Public Health Council arranged a conference dinner January 30, when a report of the appraisal of the public health activities of Denver was given. The topics emphasized in the discussion, apropos of the report, were infant mortality, milk control, diphtheria, tuberculosis, and child health in Denver. The appraisal was made by the Denver Public Health Council assisted by the Committee on Administrative Practice of the American Public Health Association.

FOUNDATION FOR POSITIVE HEALTH

THE name of the Women's Foundation for Health, Inc., has been changed to Foundation for Positive Health, Inc., with headquarters at 370 Seventh Avenue, New York, N. Y. The name has been changed to embrace programs of positive health for both adult men and women. The officers of the Foundation are Martha Tracy, M.D., president; Mary E. Wooley, first vice-president; Lenna L. Meanes, M.D., medical director.

NEW YORK CAMPAIGNS AGAINST DIPHTHERIA

A CAMPAIGN for diphtheria prevention was launched January 11 in New York City, at a luncheon given at the Harvard Club by Thomas W. Lamont of J. P. Morgan & Company, who is coöperating with Health Commissioner S. H. Wynne, M.D., and his newly formed Diphtheria Prevention Commission.

Letters have been sent to physicians of New York asking them to urge their patients who have young children in the family to have the children immunized by the toxin-antitoxin treatment.

These letters to be sent out by the family physician are in the style of a diphtheria warning and bear the seal of the City of New York and of the Medical Society of the county in which the physician resides. The warning is as follows:

The Department of Health, coöperating with the Medical Society of the County, urges me to write you to have your child protected against diphtheria at once.

It is necessary to have all young children between 9 months and 10 years safeguarded in order that they do not catch this dangerous disease.

Treatment is simple, painless, safe and lasting, and requires a few minutes each time of three visits.

I urge you to bring your child to me without delay so that your child may be protected, and the Health Department's wishes carried out.

Editors and owners of local newspapers and the directors and representatives of several health organizations of the city were guests at the luncheon. The newspaper editors have formed a press club to direct and promote the publicity of the campaign and to popularize this phase of the public health program.

AMOY SEEKS HEALTH

UNDER the above title, a recent article in the *China Medical Journal* describes how the city of Amoy in the southern part of Fukien Province is developing public health work. The city of 2 or 3 square miles, on the Island of Amoy, has a population of over 180,000.

Now, after 5 years of labor, Amoy can boast of a model system of water works which is in excellent running order. The filter beds and ozonating plants are amongst the best in the world, and next to none in the Far East. The reservoir is located among the hills far away from danger of contamination. Even the conservative old gentlemen who make up the Board of Directors are firmly convinced that this pure water supply has saved Amoy from cholera, dysentery and typhoid. They are pleased to report that in spite of opposition on the part of uneducated persons, the financial return on their $1,000,000 investment is already proving to be hopeful.

The article reports on new roads, new settlements, a city park, ponds filled, and the beginnings of a health campaign in coöperation with the Council on Health Education of China.

PERSONALS

CHARLES V. CHAPIN, M.D., former president of the A. P. H. A., was re-elected Superintendent of Health, Providence, R. I., for a term of 3 years. Dr. Chapin has served in this capacity for 45 consecutive years.

DR. W. H. NEWCOMB has resigned as Director of the Morgan County, Ill., Health Department to enter private practice.

DR. F. B. DART has been appointed Health Officer at large of Baltimore, Md., to succeed Dr. Harry Linden, resigned.

DR. W. ALLEN ETHERIDGE, associated with the Baltimore Health Department since 1923, has resigned and his successor as supervisor of dental clinics is Dr. Morris Cramer.

DR. JOSEPH P. FRANKLIN, Director of the Bureau of Communicable Diseases, Baltimore Bureau of Health, has resigned to accept the position of County Health Officer and Deputy State Health Officer for Allegany County, Md.

DR. F. H. JOHNSON, Carrizozo, N. M., has been appointed Health Officer of Lincoln County to succeed Dr. P. M. Shaver, resigned.

DR. T. B. LYON, Raon, N. M., has been appointed Health Officer of Colfax County, N. M., to succeed Dr. H. W. Heymann, resigned.

DR. A. WILLIAM LESCOHIER has been appointed general manager of Parke, Davis and Company. From 1918 until 1925 Dr. Lescohier was in charge of the production of serum, vaccines, antitoxins and other biological products when he was made director of the Department of Experimental Medicine.

DR. JOHN E. MONGER, Director of Health, State Department of Health, Ohio, from 1923 to 1929, has resigned to become managing director of the United States Standard Products Company, which manufactures vaccines, serums and antitoxins.

KATHERINE TUCKER, R.N., has been appointed general director of the National Organization for Public Health Nursing. Miss Tucker has had a wide experience in the public health nursing field and resigned as general

director of the Visiting Nurse Society of Philadelphia where she served from 1916 to 1929, to accept the position with the national organization.

RALPH C. SWEENEY, Assistant Sanitary Engineer, Ohio State Department of Health since 1919, has resigned to become Sanitary Engineer of Toledo.

EDGAR SYDENSTRICKER has resigned from the U. S. Public Health Service where he had charge of statistical investigations, to become Director of Research, Milbank Memorial Fund.

DR. I. C. RIGGIN, Cincinnati, O., has been appointed Executive Secretary of the American Heart Association with headquarters at 370 Seventh Ave., New York, N. Y. Dr. Riggin was formerly Health Commissioner of Lorain County, O., and was Executive Secretary of the Heart Council of Greater Cincinnati during 1928.

DR. ERNEST W. CAVANESS has resigned as Commissioner of Health of Kansas City, Mo.

LOUISE STANLEY, PH.D., Chief of the Bureau of Home Economics, U. S. Department of Agriculture, has been chosen to represent the department on the American Standards Association.

DR. MERRILL E. CHAMPION, who for several years has been Director of the Division of Hygiene of the Massachusetts Department of Public Health, has resigned and is succeeded by Dr. M. Luise Diez of the New York State Department of Health.

DR. ARTHUR S. HARTWELL of Norwood, Mass., has been appointed medical examiner of the first Norfolk district.

DR. ANDREW L. WEST has been appointed Director of Public Health of St. Joseph, Mich.

DR. BRON D. BLACKWELDER has been elected Director of the county health unit at Natchez, Miss.

DR. J. A. JOHNSON has been appointed Health Officer of Olean, N. Y. Dr. Johnson was formerly Health Officer from 1916 to 1922.

DR. WILLIAM R. MAY, Amory, Miss., has been chosen to direct the Lincoln County Health unit.

DR. WILLIAM SCHROEDER, JR., has been appointed head of the Department of Hospitals of Brooklyn, N. Y. This new department is under the guidance of the Department of Health and of the Department of Public Welfare.

DR. THOMAS A. RATLIFF has been reappointed President of the Cincinnati Public Health Federation. Dr. Julien E. Benjamin has been elected Vice-President and Dr. Arthur C. Bachmeyer, Honorary Secretary.

DR. J. FORREST STULTZ has resigned as Health Commissioner of Champaign County, Ohio.

CONFERENCES

April 8–12, 13th Annual Clinical Session of the American College of Physicians, Boston, Mass.

April 22–26, Seventh Annual New England Health Institute, Hartford, Conn.

May 7–8, Association of American Physicians, Atlantic City, N. J.

May 14–17, American Psychiatric Association, Atlanta, Ga.

May 27–31, National Tuberculosis Association, Atlantic City, N. J.

June 13, International Hospital Congress, Atlantic City, N. J.

June 17–21, Annual Convention, American Hospital Association, Atlantic City, N. J.

June 24–28, American Water Works Association, Toronto, Can.

July 8–13, International Council of Nurses, Montreal, Can.

July 13–20, Fortieth Congress and Exhibition of the Royal Sanitary Institute, Sheffield, England.

July 17–August 13, Third Vienna Summer School, University of Vienna, Austria.